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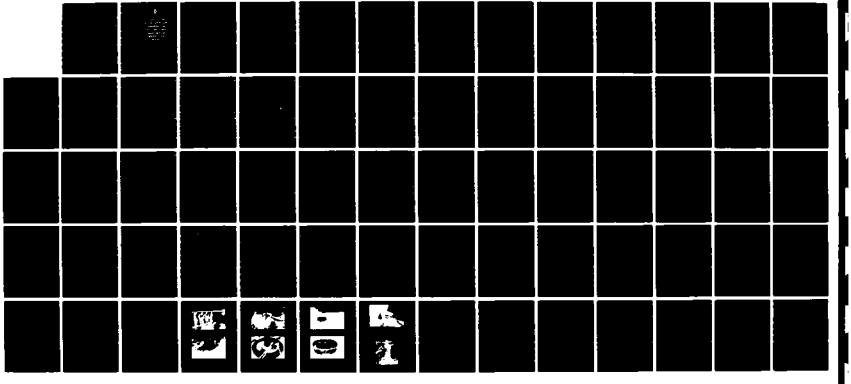

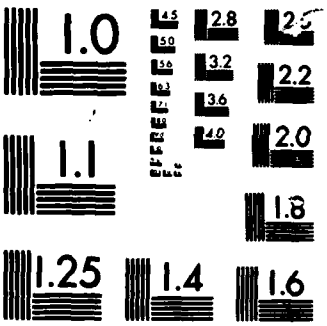

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PUGET SOUND NAVAL SHIPYARD BREMERTON FLEET MOORINGS UNDERWATER INSPECTION REPORT

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OCTOBER 1983

OCEAN ENGINEERING
AND CONSTRUCTION PROJECT OFFICE
CHESAPEAKE DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, D.C. 20374

FPO-1-83 (38)

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This report contains results of the inspection of 10 fleet moorings operated and maintained by the Puget Sound Naval Shipyard, (PSNS) Bremerton. A CHESNAVFACENGCOM-assigned Engineer-in-Charge and divers from Underwater Construction Team Two supplemented by PSNS station divers conducted the (Con't)

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inspection from 22-30 August 1983.

Of the 10 moorings inspected, 2 were found to be in good condition, 2 in poor condition and recommended for removal from service until overhauled, and 6 were found to be in fair condition with 3 of these requiring reclassification to a lower mooring class. Specific comments concerning each of these moorings and recommendations for future actions are included within this report.

ABSTRACT

This report contains results of the inspection of 10 fleet moorings operated and maintained by the Puget Sound Naval Shipyard, (PSNS) Bremerton. A CHESNAVFACENGCOM-assigned Engineer-in-Charge and divers from Underwater Construction Team Two supplemented by PSNS station divers conducted the inspection from 22-30 August 1983.

Of the 10 moorings inspected, 2 were found to be in good condition, 2 in poor condition and recommended for removal from service until overhauled, and 6 were found to be in fair condition with 3 of these requiring reclassification to a lower mooring class. Specific comments concerning each of these moorings and recommendations for future actions are included within this report.

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PUGET SOUND NAVAL SHIPYARD
FLEET MOORINGS INSPECTION REPORT

1.0 INTRODUCTION

1.1 Background. Under the COMNAVFACENGCOM Fleet Mooring Maintenance (FMM) Program, CHESNAVFACENGCOM has been assigned the responsibility to plan and conduct periodic diver inspections of all fleet moorings worldwide. In carrying out this responsibility, CHESNAVFACENGCOM designated an Engineer-in-Charge (EIC) to provide inspection planning and onsite technical direction for the underwater inspection of fleet moorings located near the Puget Sound Naval Shipyard (PSNS), Bremerton, Washington. The actual underwater portion of the inspection was performed by divers of Underwater Construction Team Two (UCT TWO) and PSNS station divers. The inspection was conducted 22-30 August 1983.

1.2 General Mooring History. PSNS Bremerton currently operates and maintains 10 fleet moorings consisting of 3A- and 7F-Class moorings. Figure 1 shows the overall geographic position of these moorings, while Figures 2 and 3 are enlargements of Sinclair and Carr Inlets respectively and show the positions of the fleet moorings in these two bodies of water.

2.0 INSPECTION PROCEDURES

2.1 Inspection Objectives. The purpose of the mooring inspections was to determine the general physical condition of the buoys and chain assemblies and, when possible, to verify or update existing as-built and maintenance records. Divers inspected only a portion of the submerged buoy hull and chain assemblies in order to compile a general description of the mooring's condition. The existence of fairly consistent measurements during this inspection provides a good indication of the mooring's overall condition. It should be kept in mind that periodic underwater inspections are intended as an expedient and relatively inexpensive supplement to accurate maintenance records. As such, they cannot fully substitute for a complete inspection involving recovery of the mooring and the measurement of each component.

Chain wire diameter measurements are used to evaluate the condition of a mooring. After the chain was cleaned to bare metal, a selective sampling of the wire diameter of chain links and connecting hardware was taken in order to determine the amount of deterioration due to corrosion and wear. "Single link" measurements were taken where the chain was slack to detect corrosion loss. "Double link" measurements were taken where two links connected under tension to detect the combined effects of corrosion and wear. Chain links and other components which measured 90 percent or greater of original wire diameter are considered to be in "good" condition; measurement between 80 and 90 percent of original diameter is considered "fair" condition and is cause for the mooring to be downgraded in classification; any measurement less than 80 percent is considered "poor" and is cause for the mooring to be declared unsatisfactory for fleet use. When a mooring is constructed from oversized chain, a measurement between 80 and 90 percent of the original wire size results in a mooring being considered in "fair condition," but no downgrading is required if the worn chain is still larger than required in the original design.

Standard underwater inspection procedures do not call for the inspection of any part of the mooring which has been buried or which is below a water

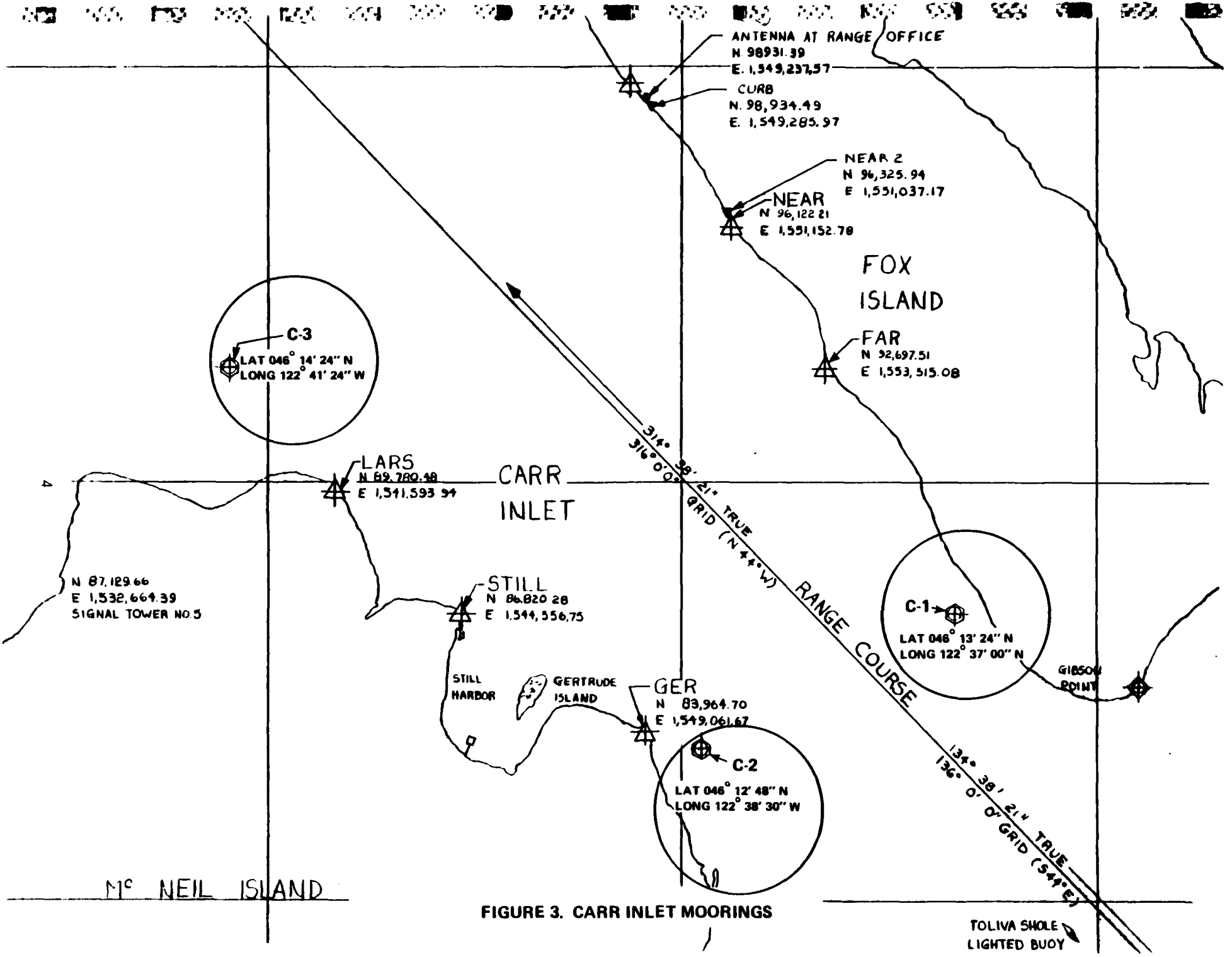
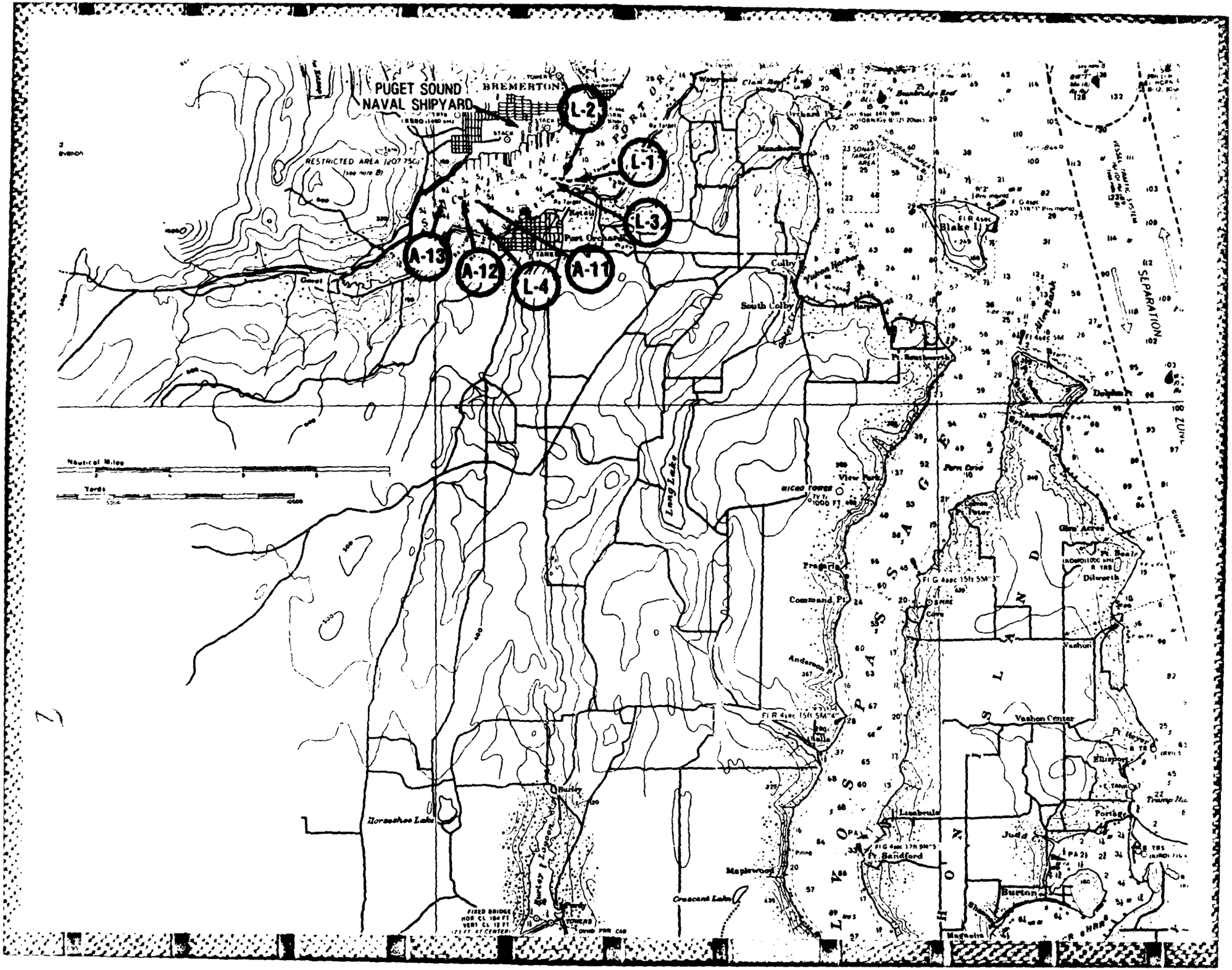


FIGURE 3. CARR INLET MOORINGS


PUGET SOUND
NAVAL SHIPYARD
BREMERTON
L-2
L-1
L-3
L-4
A-13
A-12
A-11
RESTRICTED AREA
SEPARATION
Colby
South Colby
Blake I.
Long Lake
Port Orchard
Manchester
Dalco Passage
Vashon Island
Vashon
Vashon Center
Burton
Maplewood
Crescent Lake
Horseshoe Lake
Dilworth
Glen Acres
Portage
Judd
Lisabeula
Ft. Sandford
Command Pt.
Nautical Miles
Yards

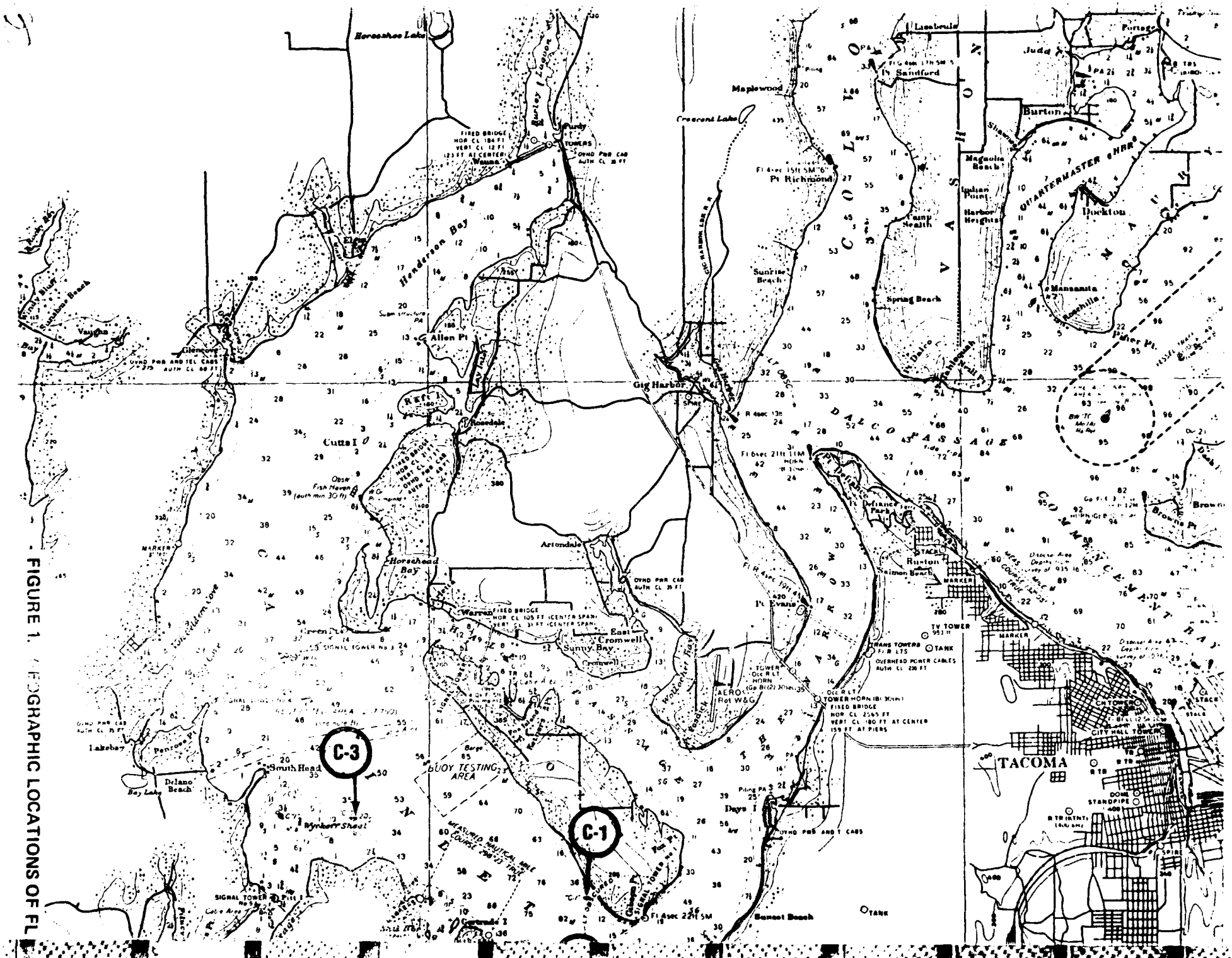


FIGURE 1. TOPOGRAPHIC LOCATIONS OF FL

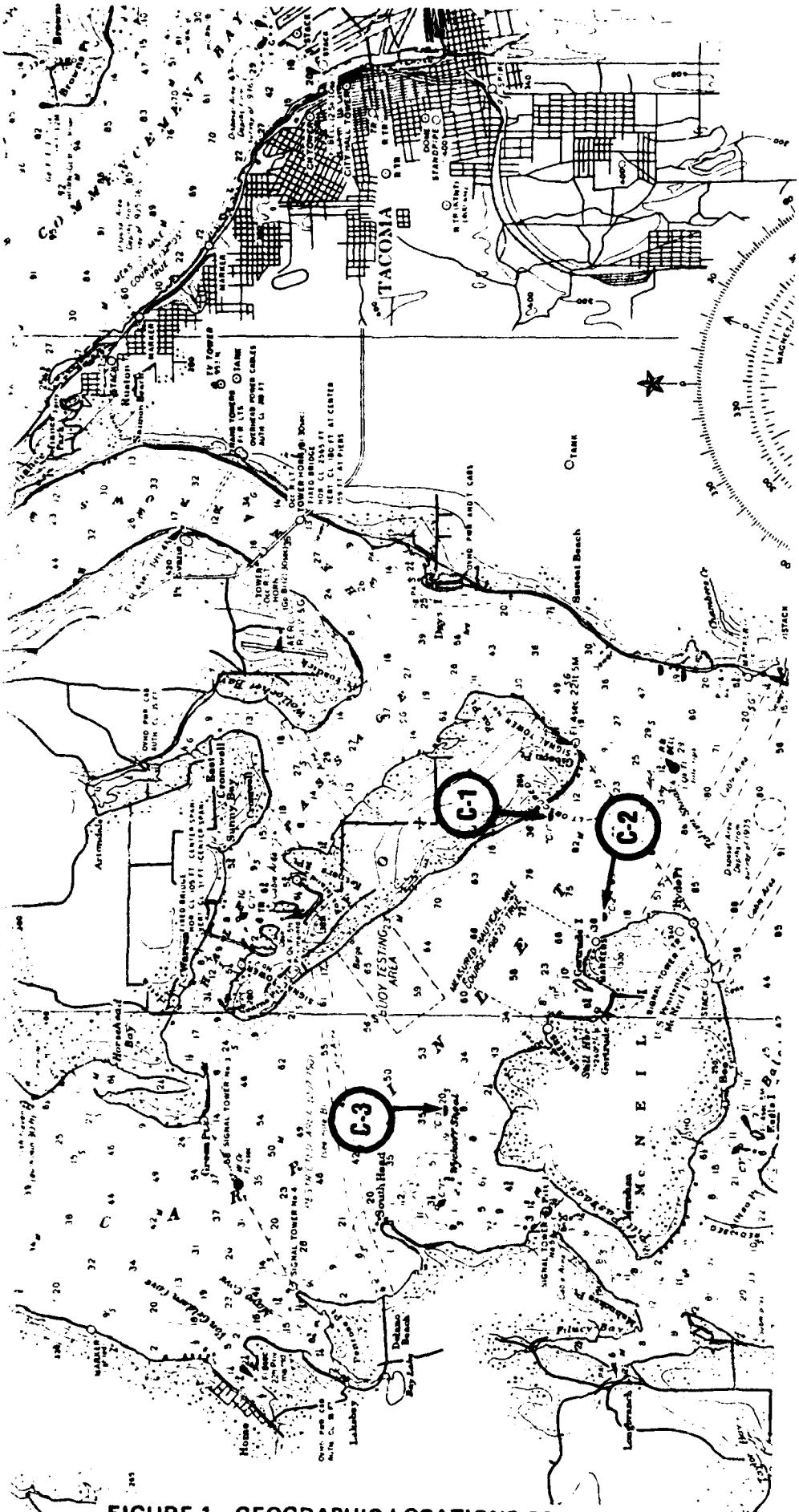
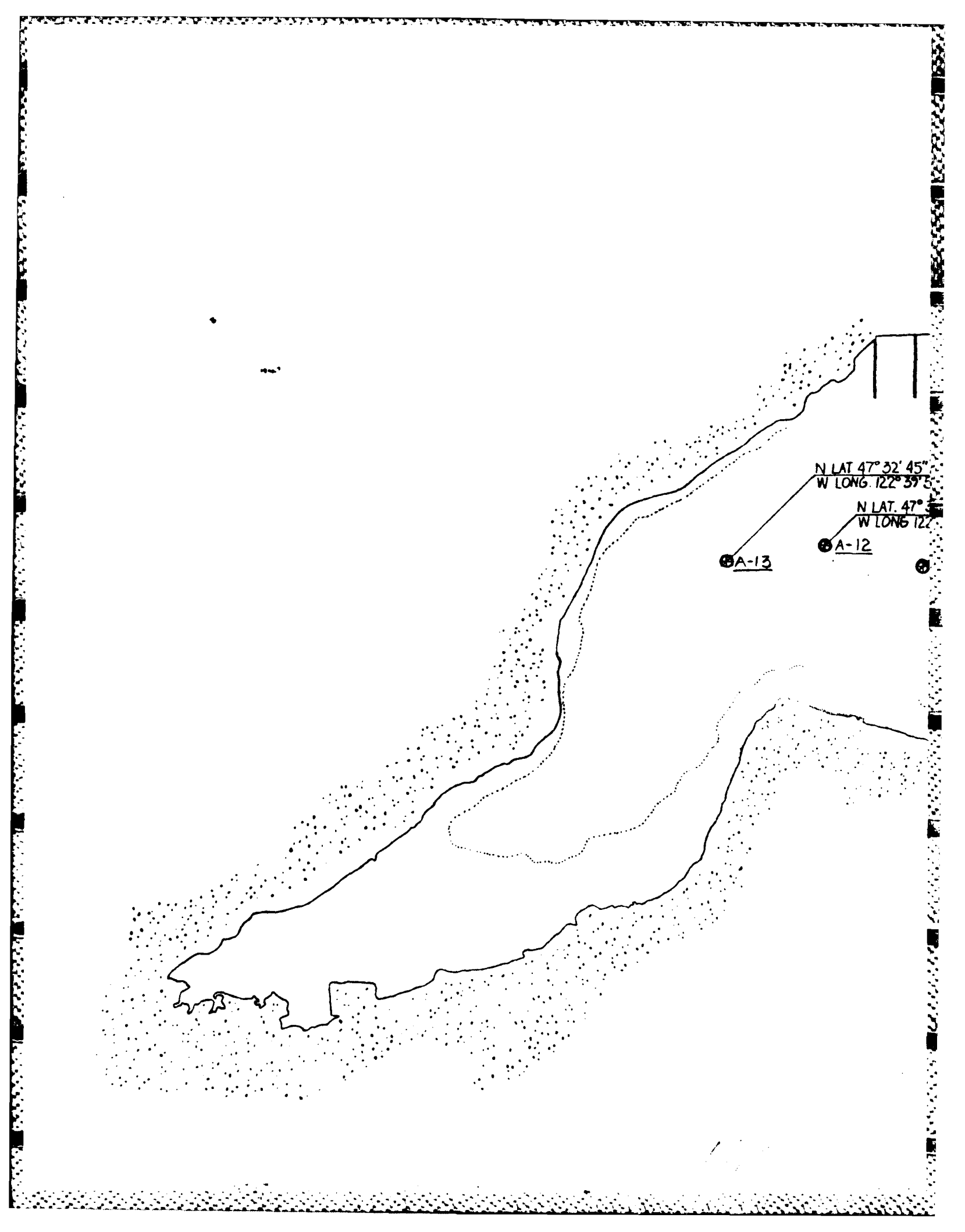
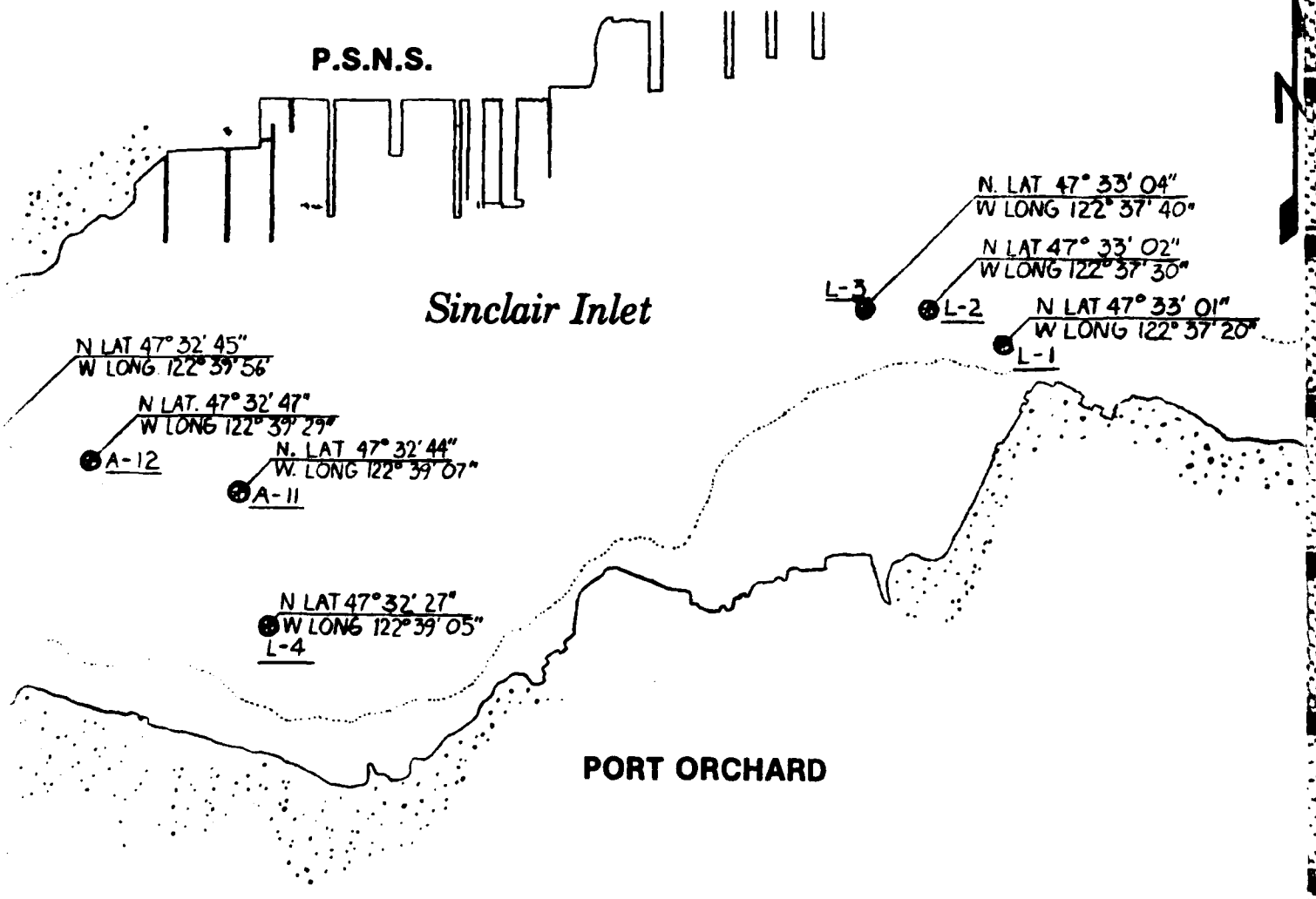


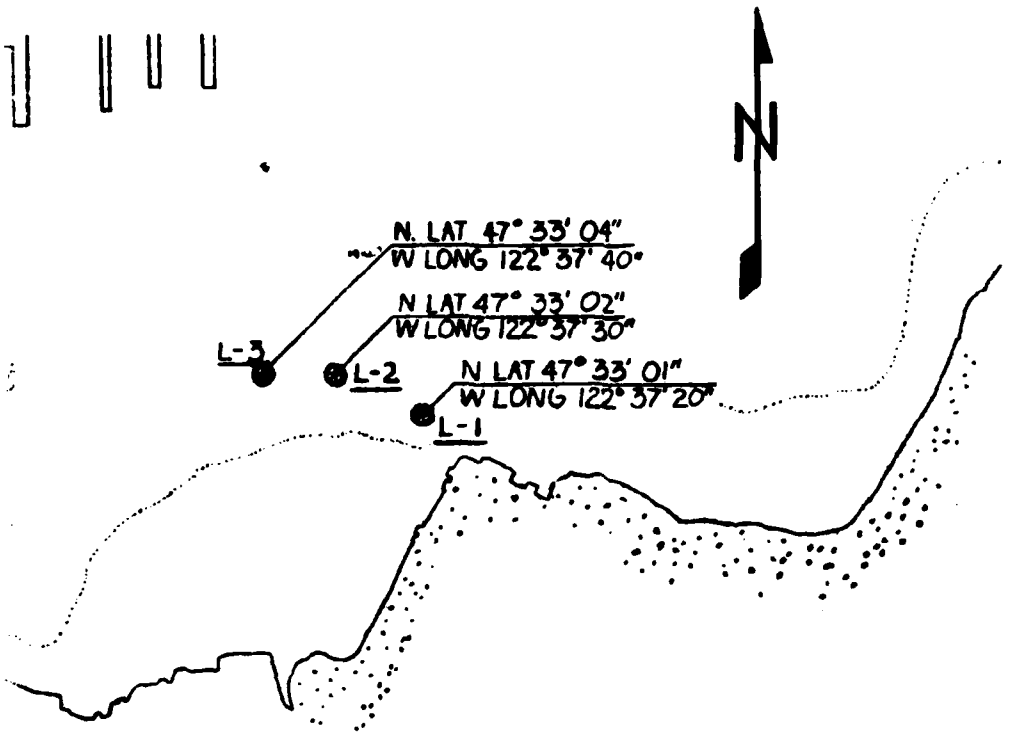
FIGURE 1. GEOGRAPHIC LOCATIONS OF FLEET MOORINGS


N LAT 47° 32' 45"
W LONG. 122° 39' 5
N LAT. 47°
W LONG 122
A-12
A-13



SITE PLAN

FIGURE 2. SINCLAIR IN



T ORCHARD

PLAN

FIGURE 2. SINCLAIR INLET MOORINGS

depth of 130 feet if scuba gear is used. Ground legs and risers were observed only to the point at which they became buried; no attempt was made to locate and inspect anchors or other mooring materials which were not readily visible. For clarification, schematic drawings of the two types of moorings found at PSNS Bremerton are contained in Figures 4 and 5.

2.2 Buoy

2.2.1 Buoy Topside. Each buoy was inspected to determine its general condition. The buoy markings were checked for conformance to those noted in applicable charts. Physical damage such as holes, dents, or listing was described. Hatches, openings, and penetrations were examined and worn material and rust were reported.

The buoy fenders and chafing rails were checked for integrity and secure connection to the buoy. Buoy top jewelry was measured with calipers to find the overall outside dimensions and areas of most severe reduction in wire size.

2.2.2 Buoy Lower Portion. Divers inspected the buoy below the waterline. The thickness of marine growth was recorded, 1-foot-square areas were selected and cleared of growth without damaging the painted surface, and the condition of the buoy bottom was noted.

2.3 Riser. To determine chain wear, each riser chain was inspected by taking three consecutive double link measurements, using precut gauges and/or calipers, at both ends and at the center of the riser. To determine original chain size, divers took single link caliper measurements of the wire diameter.

2.4 Ground Rings/Ground Legs/Sinkers and Anchors. None were visible during the course of the inspection.

2.5 Schematic Mooring Diagrams. Figures 4 and 5 are schematic drawings of the two types of moorings operated and maintained by PSNS Bremerton.

3.0 INSPECTION SUMMARY

An in-depth discussion of the inspection results is contained in Annex A. Annex B contains buoy location survey data, Annex C contains photographs, and Annex D contains a copy of the preliminary report of the results of the inspection. A detailed evaluation of the information gathered during the inspection indicates the following:

- Of the 10 moorings inspected, two were found to be in good condition, two in unsatisfactory condition and should be removed from service until overhauls are completed, and six were found to be in fair condition with half of these recommended for reclassification to a lower mooring class.

- Due to excessively worn riser chain, moorings L-2 and L-3 are in unsatisfactory condition for continued usage by operational fleet units.

- Due to undersized riser chain, moorings A-11, A-12, and A-13 should be reclassified as lower class moorings.

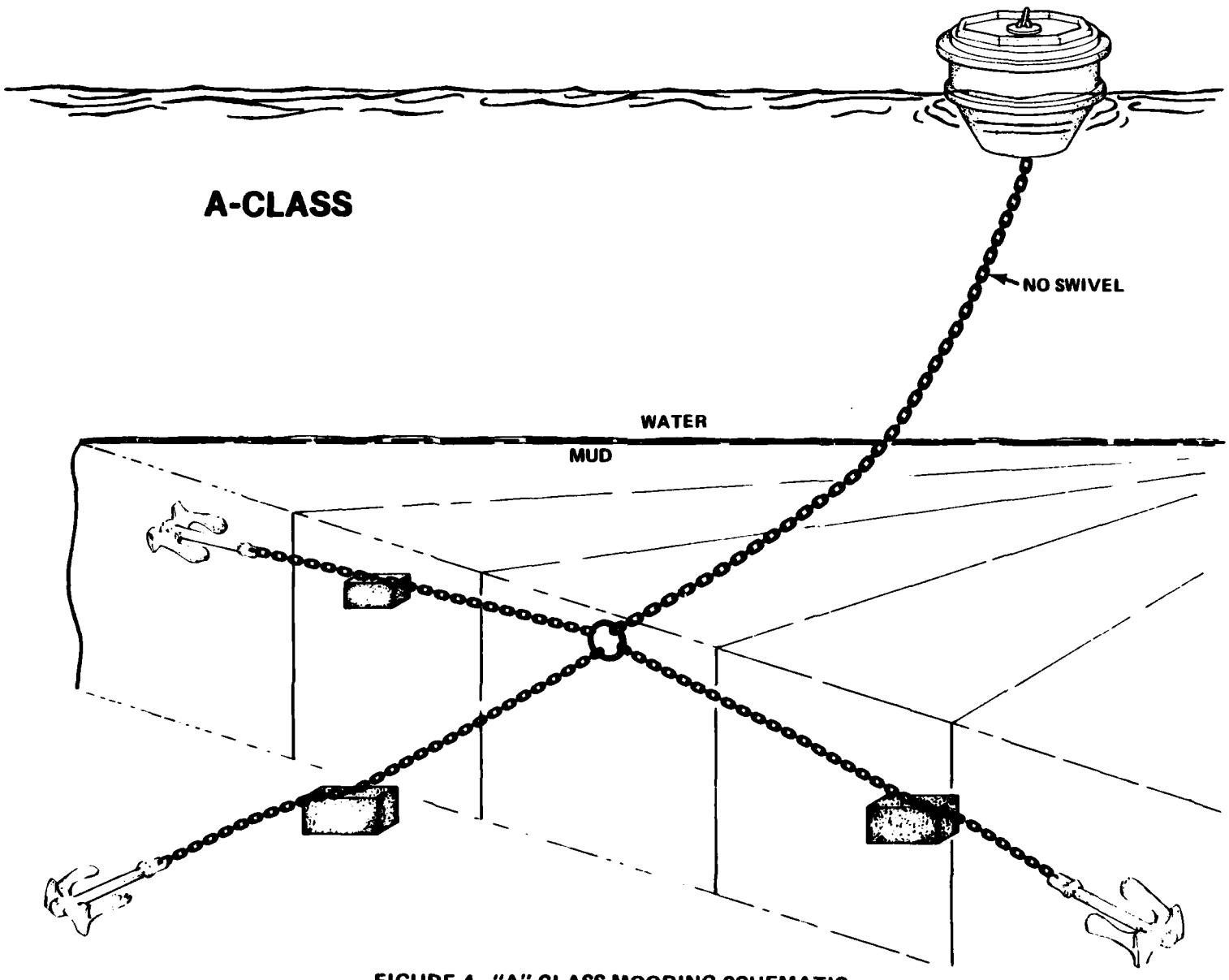


FIGURE 4. "A" CLASS MOORING SCHEMATIC

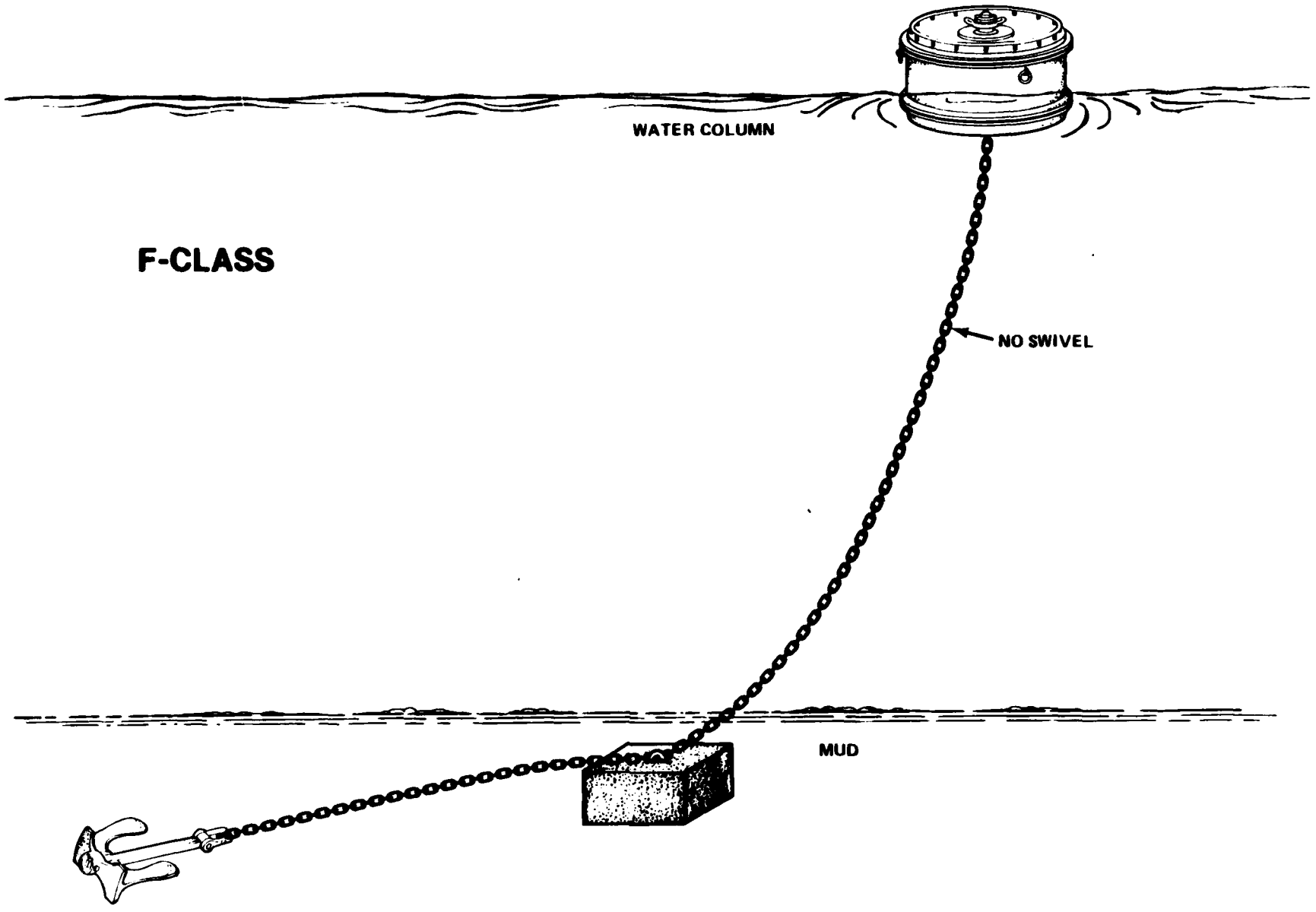


FIGURE 5. "F" CLASS MOORING SCHEMATIC

- o Buoy C-1 has about a 10-degree list which could be caused by water leakage.

- o Although the riser chain of moorings C-1, C-2, and C-3 are worn to within 80 and 90 percent of their original wire diameters, the existing chain in each of these moorings is larger than required for an "F" class mooring designation and, therefore, are in satisfactory condition for continued usage as this class of mooring.

- o Only one mooring, C-2, was found to contain a swivel in its riser. The other moorings had no swivels in the parts inspected.

- o Several moorings have unnecessary wire rope attached to their top hardware.

Table 1 presents the current status of the PSNS Bremerton fleet mooring systems.

Table 1. Inspection Summary

Mooring Number	Mooring Class	Condition			Remarks
		Good	Fair	Poor	
L-1	FR	X			Satisfactory Condition.
L-2	FR			X	Excessive Riser Chain Wear, Missing Studs, No Swivel, Unsatisfactory Condition.
L-3	FR			X	Excessive Riser Chain Wear, Unsatisfactory Condition.
L-4	FR	X			Located in a New Position.
A-11	AR		X		Undersized Riser Chain. Reclassify as a Class D mooring.
A-12	AR		X		Undersized Riser Chain. Reclassify as a Class B mooring.
A-13	AR		X		Undersized Riser Chain. Reclassify as a Class C mooring.
C-1	FR		X		Oversized Riser Chain Worn to Between 80 and 90 Percent of Original Wire Diameter.
C-2	FR		X		Oversized Riser Chain Worn to Between 80 and 90 Percent of Original Wire Diameter.
C-3	FR		X		Oversized Riser Chain Worn to between 80 and 90 percent of Original Wire Diameter.

4.0 COMMENTS/RECOMMENDATIONS

- Moorings L-2 and L-3 should be removed from service and overhauled at the earliest practical time.
- Due to undersized (2-inch) riser chain, mooring A-11 should be reclassified as a Class D mooring.
- Due to undersized (2 1/2-inch) riser chain, mooring A-12 should be reclassified as a Class B mooring.
- Due to undersized (2 1/4-inch) riser chain, mooring A-13 should be reclassified as a Class C mooring.
- The cause of the list of Buoy C-1 should be investigated when practical. In the interim, the buoy should be periodically observed to check for either an increased list angle or decreased freeboard.
- During the next maintenance/overhaul period, a swivel should be inserted in each mooring riser that does not already have one.
- The unnecessary wire rope attached to several buoys should be removed.
- None of the moorings are equipped with cathodic protection systems.
- The hole in Buoy C-3's top deck welded seam should be repaired as soon as practical.
- A review of the design of the seven "F" Class moorings is recommended. Each of these moorings has only one ground leg and anchor vice the three normally installed with a free-swinging mooring.
- In view of the low reported usage of some of these moorings, the requirement for maintaining 10 fleet moorings should be reviewed.

ANNEX A

MOORING INSPECTION RESULTS

This Annex contains for each mooring:

- A summation of the inspection data obtained by the CHESNAVFACENGCOM EIC, UCT TWO divers, and PSNS station divers, and
- a diver data reporting form.

Buoy

This is a 9 1/2-foot-diameter drum-type buoy with a 2 3/4-inch-thick tension bar. It is newly refurbished and in good condition. A wire rope is hanging over the side.

Riser

The divers reported 1 3/4-inch chain from the buoy to the bottom. No swivels or clumps were located. All measurements were greater than 90 percent of original wire diameter.

Conclusion/Recommendation

The mooring is in satisfactory condition for continued fleet use.

MOORING NO. L-1 CLASS: FR LOCATION: SINCLAIR INLET NSY PUGET SO LAT: 47°33'01" LONG: 122°37'30"

WATER DEPTH: 50' ANCHOR SIZE/TYPE: NI BUOY TYPE: DRUM W/TENSION BAR

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 2'-3' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION							COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D	
				90+	80+	80-	90+	80+	80-		
BUOY HARDWARE											9'6" DRUM TYPE BUOY. TENSION BAR
2½" SHACKLE				✓							2¾" THICK. BUOY FRESHLY PAINTED
13" GROUND RING				✓							BUT FENDERS DETERIORATED. WIRE
SMALLER SHACKLE				✓							ROPE FROM TOP JEWELRY HANGS OVER THE
											SIDE. BARGE MOORED TO BUOY. BUOY
RISER	NEAR BUOY		1¾"	✓✓✓			✓✓			8'	BOTTOM OK. T-BAR TO SHACKLE
	MIDDLE		↓	✓✓✓			✓✓✓			30'	RISER COVERED WITH HEAVY GROWTH. NO
	NEAR GRD RG		↓	✓✓✓			✓✓			50'	SWIVEL OBSERVED.
GROUND RING			↓								
GROUND LEG NO. A	UPPER END		↓								
	MIDDLE		↓								
	ENTERS BOTTOM		↓								
GROUND LEG NO. B	UPPER END		↓								
	MIDDLE		↓								
	ENTERS BOTTOM		↓								
GROUND LEG NO. C	UPPER END		↓								
	MIDDLE		↓								
	ENTERS BOTTOM	↓	↓								
GROUND LEG NO. D	UPPER END		↓								
	MIDDLE		↓								DIVE TIME 32 MINUTES
	ENTERS BOTTOM		↓								

DATE 29 AUG 1983 ENGINEER IN CHARGE: C.A. PENNINGTON DIVERS: BRADSHAW / HARDING

CHESNAVFACENGCOM REPORT FPO-1-83(38), "PUGET SOUND NSY FLEET MOORING UNDERWATER INSPECTION REPORT"

Buoy

This is a 9 1/2-foot-diameter drum-type buoy with a 2 3/4-inch-thick tension bar and 32 inches of free board. The buoy is heavily rusted with little paint remaining. The fenders are badly deteriorated. The ground ring in the top jewelry is distorted in shape and worn to less than 80 percent of its original wire diameter.

Riser

The riser down to 20 feet is new 2 1/2-inch chain. From 20 feet to the bottom, the chain is older and measures only 72 percent of its original wire diameter. Near the bottom, several links in a row are heavily worn and some studs are missing. The chain was twisted so that double link measurements were not meaningful. A gap was observed between the links and estimated at 1 1/4 inches, indicating excessive wear.

Conclusion/Recommendation

Due to the low riser chain measurement (72 percent), the missing studs, the lack of a swivel, and observed wear, this mooring is unsatisfactory for continued fleet use and should be removed from service pending completion of an overhaul.

MOORING NO. L-2 CLASS FR LOCATION: SINCLAIR INLET NSY PUGET SOUND AT: 47° 33' 02" N LONG: 122° 37' 30" W

WATER DEPTH: 55' ANCHOR SIZE/TYPE: NI BUOY TYPE: DRUM W/ TENSION BAR

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 2'-3' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION							D	COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %				
				90+	80+	80-	90+	80+	80-		
BUOY HARDWARE											9'6" DRUM TYPE BUOY. TENSION BAR
2 3/4" SHACKLE					✓						2 3/4" THICK. TOP FENDER BADLY
GROUND RING-						✓					ROTTED. BOTTOM WOOD FENDER IS
DETACHABLE LINK				✓							MISSING. MODERATE RUSTING. 33"
											FREEBOARD. GROUND RING IN TOP
RISER	NEAR BUOY		2 1/2"	✓✓✓			NI			6'	JEWELRY IS OBLONG (15" x 20"). BOTTOM CK
	MIDDLE		2 1/4"	✓✓	✓				✓✓✓	25'	2 1/2" CHAIN NEAR SURFACE IN GOOD
	NEAR GRD RG		1 1/4"	✓✓	✓					55'	CONDITION. BELOW 30', CHAIN IS 2 1/4"
GROUND RING											AND WAS MEASURED TO BE ONLY
GROUND LEG NO A	UPPER END										72% OF INITIAL WIRE DIAMETER.
	MIDDLE										CHAIN NEAR BOTTOM IS 1 1/4" AND
	ENTERS BOTTOM										BADLY WORN. RISER IS TWISTED
GROUND LEG NO B	UPPER END										CAUSING GAPS BETWEEN LINKS.
	MIDDLE										LINK AT 54' IS MISSING. ITS STUD
	ENTERS BOTTOM										AND IS DISTORTED.
GROUND LEG NO C	UPPER END										GROUND RING, GROUND LEGS ARE
	MIDDLE										NOT VISIBLE
	ENTERS BOTTOM	↓									
GROUND LEG NO D	UPPER END										
	MIDDLE										DIVE TIME 22 MINUTES
	ENTERS BOTTOM										

A-5

DATE 29 AUG 1983 ENGINEER IN CHARGE: C.A. PELLINGTON DIVERS: SPEER / JARVIS

INSPECTION RESULTS
L-3

Buoy

This is a 9 1/2-foot-diameter drum-type buoy with a tension bar and 36 inches of free board. The buoy is severely rusted with little paint remaining. The top jewelry is badly worn.

Riser

The chain from the buoy to 48 feet is old and worn to between 80 and 90 percent of its original wire diameter. Near the bottom, links are worn to 67 percent of their original wire diameter. This is less than 80 percent of the 1 1/4-inch chain required by DM-26. No clump or swivel was located.

Conclusion/Recommendation

This mooring is unsatisfactory for fleet use. All usage should be discontinued and the mooring should be overhauled at the earliest possible time.

MOORING NO: L-3 CLASS: FC LOCATION: SINCLAIR INLET NSY PUGET SOUND LAT: 47°-33'-04"N LONG: 122°-37'-40"W

WATER DEPTH: 54' ANCHOR SIZE/TYPE: NI BUOY TYPE: DRUM W/TENSION BAR

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 2'-3' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION: NEW	SINGLE LINK % 90+	SINGLE LINK % 80+	SINGLE LINK % 80-	DOUBLE LINK % 90+	DOUBLE LINK % 80+	DOUBLE LINK % 80-	D	COMMENT
BUOY HARDWARE											9'6" DIAMETER DRUM TYPE BUOY
3" SHACKLE					✓						WITH A 36" FREEBOARD. THE BUOY
12" GROUND RING					✓						IS HEAVILY RUSTED AND THE FENDERS
3" SHACKLE					✓						ARE BADLY DETERIORATED. LITTLE
DETACHABLE LINK					✓						PAINT REMAINS. BELOW WATER LINE
RISER	NEAR BUOY		2½"	✓✓✓				✓✓✓		5'	BUOY HAS A HEAVY COATING OF
	MIDDLE		2½"	✓✓✓				✓✓✓		25'	MARINE GROWTH.
	NEAR GRD RG		1½"	✓✓✓				✓	✓✓	50'	RISER WORN TO 85% OF ORIGINAL WIRE
GROUND RING											DIAMETER NEAR THE SURFACE, 82%
GROUND LEG NO A	UPPER END										AT 25' AND 67% NEAR THE BOTTOM.
	MIDDLE										RISER ENTERS BOTTOM WITH GROUND
	ENTERS BOTTOM										RING AND GROUND LEGS BURIED.
GROUND LEG NO B	UPPER END										1¼" WIRE ROPE TANGLED IN RISER.
	MIDDLE										SEVEN LINKS IN A ROW BELOW 48'
	ENTERS BOTTOM										DEPTH ARE BADLY WORN.
GROUND LEG NO C	UPPER END										
	MIDDLE										
	ENTERS BOTTOM	↓									
GROUND LEG NO D	UPPER END										
	MIDDLE										DIVE TIME 40 MINUTES
	ENTERS BOTTOM										

DATE: 29 AUG 83 ENGINEER IN CHARGE: C.A. PELLINGTON DIVERS: PELLET / TZUCALOW

Buoy

This is a 9 1/2-foot-diameter drum-type buoy with a tension bar and 36 inches of free board. The buoy is newly refurbished and in good condition. The edges of the manhole cover show some rust and possible leakage. The top jewelry is all in good condition.

Riser

The riser consists of 2 1/2-inch chain and measured greater than 90 percent of its original wire diameter. Heavy marine growth was reported and no swivel was located.

Conclusion/Recommendation

This mooring is in satisfactory condition for fleet use. However, only 30 feet of water is under the buoy. This mooring was relocated from its last reported position.

MOORING NO: L-4 CLASS: FR LOCATION: SINCLAIR INLET NSY PUGET SOUND DAT: 47°-32'-17" N LONG: 122°-39'-05" W

WATER DEPTH: 30' ANCHOR SIZE/TYPE: N'I BUOY TYPE: DRUM W/TENSION BAR

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 1' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION NEW	SINGLE LINK % 90+	SINGLE LINK % 80+	SINGLE LINK % 80-	DOUBLE LINK % 90+	DOUBLE LINK % 80+	DOUBLE LINK % 80-	D	COMMENT
BUOY HARDWARE											9'6" DRUM TYPE BUOY WITH A 36"
2 3/4" SHACKLE				✓							FREE BOARD. EDGES OF MANHOLE
2 3/4" END LINK				✓							COVER RUSTED. BUOY BOTTOM OK BUT
2 3/4" SHACKLE				✓							HAS MARINE GROWTH ABOUT TWO FEET
2 3/4" END LINK/DETACHABLE				✓✓							THICK.
RISER	NEAR BUOY		2 1/2	✓✓✓			✓✓✓			6'	RISER IN GOOD CONDITION. NO
	MIDDLE		↓	✓✓✓			✓✓✓			15'	SWIVEL NOTED. RISER ENTERS
	NEAR GRD RG		↓	✓✓✓			✓✓✓			30'	BOTTOM. GROUND RING/LEGS
GROUND RING											BURIED.
GROUND LEG NO A	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO B	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO C	UPPER END										
	MIDDLE										
	ENTERS BOTTOM	↓									
GROUND LEG NO D	UPPER END										
	MIDDLE										DIVE TIME 24 MINUTES
	ENTERS BOTTOM										

DATE: 24 AUGUST 1983 ENGINEER IN CHARGE: C.A. PENNINGTON DIVERS: POELLET/TZUCANOW

CHESNAVFACENGCOM REPORT FPO-1-83(38), "PUGET SOUND NSY FLEET MOORING UNDERWATER INSPECTION REPORT"

Buoy

This is a 12-foot-diameter peg-top buoy with a tension bar and 38 inches of freeboard. The buoy was recently refurbished and is in good condition except for a torn pad eye on one side and a wire rope hanging over the side. The rub rails are in good condition but there is no fender on the bottom. The top fender is in good condition as is the buoy's bottom.

Riser

The upper 20 feet of the riser is 2 1/2-inch chain which is in good condition. The riser from the 20 foot mark down is 2-inch chain also in good condition. All measurements show the chain to be greater than 90 percent of its original wire diameter. No swivel was located.

Conclusion/Recommendation

The mooring is in satisfactory condition. However, the chain is undersized for an A-class mooring (2 3/4") and must be reclassified to a D-class mooring with a holding capacity limited to 75K pounds.

MOORING NO: A-11 CLASS: AR LOCATION: SINCLAIR INLET NSY PUGET SOUND LAT: 47°-32'-43"N LONG: 122°-34'-08"W

WATER DEPTH: 42' ANCHOR SIZE/TYPE: NI BUOY TYPE: PEG TOP W/TENSION BAR

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 1' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION NEW	SINGLE LINK % 90+	SINGLE LINK % 80+	SINGLE LINK % 80-	DOUBLE LINK % 90+	DOUBLE LINK % 80+	DOUBLE LINK % 80-	D	COMMENT
BUOY HARDWARE											12' DIAMETER PEG TOP BUOY WITH
3"F SHACKLE W/LUGS				✓							A 35" FREEBOARD. 2 3/4" TENSION
2 3/4" END LINK				✓							BAR. 7/8" WIRE ROPE ATTACHED
											TO A 1½" SHACKLE THROUGH 3"
											SHACKLE LUG. BOTTOM WOOD
RISER	NEAR BUOY		2½"	✓✓✓			✓✓✓			7'	FENDER MISSING. ONE PADEYE
	MIDDLE		2"	✓✓✓			✓✓✓			20'	TORN OFF. RUB RAILS / BUOY
	NEAR GRD RG		↓	✓✓✓			✓✓✓			40'	BOTTOM OK.
GROUND RING											TOP 20' OF RISER PAINTED.
GROUND LEG NO A	UPPER END										OLDER CHAIN BELOW 20'. THE 7/8"
	MIDDLE										WIRE ROPE ENTERS THE BOTTOM
	ENTERS BOTTOM										BY THE RISER.
GROUND LEG NO B	UPPER END										GROUND RING / GROUND LEGS BURIED
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO C	UPPER END										
	MIDDLE										
	ENTERS BOTTOM	↓									
GROUND LEG NO D	UPPER END										
	MIDDLE										DIVE TIME 35 MINUTES
	ENTERS BOTTOM										

DATE 29 AUGUST 1983 ENGINEER IN CHARGE: CA PENNINGTON DIVERS: PELLET / TZUCANOK

CHESNAVFACENGCOM REPORT FPO-1-83(38), "PUGET SOUND NSY FLEET MOORING UNDERWATER INSPECTION REPORT"

Buoy

This is a 12-foot-diameter peg-top buoy with a 2 3/4-inch-thick tension bar and 4 feet of freeboard. The buoy was recently refurbished and is in good condition. The chaffing rails have metal plates attached.

Riser

The riser consists of 2 1/2-inch chain and measures greater than 90 percent of its original wire diameter. However, the chain is undersized for an A-class mooring (2 3/4"). No swivel was located.

Conclusion/Recommendation

The mooring is satisfactory for fleet use, but due to the undersized chain, the mooring must be reclassified to a B-class mooring with a holding capacity limited to 125K pounds.

MOORING NO: A-12 CLASS: AR LOCATION: SINCLAIR INLET NSY FLEET MOORING LAT: 47°-32'-47"N LONG: 122°-39'-28"W

WATER DEPTH: 42' ANCHOR SIZE/TYPE: NI BUOY TYPE: PEG TOP W/TENSION BAR

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 1' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION							COMMENT
			NEW	SINGLE LINK %			DOUBLE LINK %			D	
				90+	80+	80-	90+	80+	80-		
BUOY HARDWARE											12' DIAMETER PEG TOP BUOY. 2 3/4"
3" SHACKLE W/LUGS				✓							TENSION BAR. 48" FREEBOARD. METAL
2 3/4" END LINK											STRIPS COVER FENDERS/RUB RAILS. ONE
											HALF METAL PLATE AROUND TENSION
											BAR MISSING. BUOY BOTTOM HAS HEAVY
RISER	NEAR BUOY		2½"	✓✓✓			✓✓✓			7'	COATING OF MARINE GROWTH.
	MIDDLE		↓	✓✓✓			✓✓✓			22'	RISER HAS SOME LIGHT PITTING.
	NEAR GRD RG		↓	✓✓✓			✓✓✓			40'	GROUND RING/GROUND LEGS BURIED.
GROUND RING		↓									
GROUND LEG NO A	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO B	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO C	UPPER END										
	MIDDLE										
	ENTERS BOTTOM	↓									
GROUND LEG NO D	UPPER END										
	MIDDLE										DIVE TIME 26 MINUTES
	ENTERS BOTTOM										

DATE 29 AUGUST 1983 ENGINEER IN CHARGE: C.A. PENNINGTON DIVERS: BRADSHAW/HARDING

CHESNAVFACENGCOM REPORT FPO-1-83(38), "PUGET SOUND NSY FLEET MOORING UNDERWATER INSPECTION REPORT"

Buoy

This is a 12-foot diameter peg-top buoy with a hawse pipe and 5 feet of freeboard. The buoy is in very good condition. The chaffing rails and fenders have steel plates attached.

Riser

All of the chain is in good condition. However, it is mixed in sizes and is undersized for an A-class mooring (2 3/4 inch). The smallest diameter chain found was 2 1/4 inch. No swivel was located.

Conclusion/Recommendation

The mooring is satisfactory for continued fleet use. However, due to the undersized chain, the mooring must be reclassified to a C-class mooring with a holding capacity limited to 100K pounds.

MOORING NO: A-13 CLASS: AR LOCATION: SINCLAIR INLET NSY PUGET SOUND LAT: 47°-32'-45" N LONG: 122°-39'-52" W

WATER DEPTH: 32' ANCHOR SIZE/TYPE: N I BUOY TYPE: PEG TOP W/HAWSEPIPE

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 2' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION NEW	SINGLE LINK % 90+	SINGLE LINK % 80+	SINGLE LINK % 80-	DOUBLE LINK % 90+	DOUBLE LINK % 80+	DOUBLE LINK % 80-	D	COMMENT
BUOY HARDWARE											12' DIAMETER PEG TOP WITH CO"
DETACHABLE LINK				✓							FREEBOARD, METAL STRIPS COVER
GROUND RING (13")				✓							RUB RAILS AND FENDERS. HAWSE
											CHAIN TO DETACH TO GROUND RING.
											BUOY IN GOOD CONDITION.
RISER	NEAR BUOY		2¼"	√√√			√√√			7'	CHAIN GOOD CONDITION. FROM 20'-25'
	MIDDLE		2½"	√√√			√√√			20'	HAS 2½" CHAIN – ABOVE AND BELOW
	NEAR GRD RG		2¼"	√√√			√√√			30'	2¼" CHAIN.
GROUND RING											ABOUT 18" OF TUBE WORMS COVER
GROUND LEG NO A	UPPER END										RISER WHICH VERTICALLY ENTERS
	MIDDLE										THE BOTTOM.
	ENTERS BOTTOM										GROUND RING/GROUND LEGS BURIED
GROUND LEG NO B	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO C	UPPER END										
	MIDDLE										
	ENTERS BOTTOM	↓									
GROUND LEG NO D	UPPER END										
	MIDDLE										DIVE TIME 29 MINUTES
	ENTERS BOTTOM										

DATE 29 AUGUST 1983 ENGINEER IN CHARGE: C. A. PENNINGTON DIVERS: SPEER / JARVIS

CHESNAVFACENGCOM REPORT FPO-1-83(38), "PUGET SOUND NSY FLEET MOORING UNDERWATER INSPECTION REPORT"

INSPECTION RESULTS
MOORING C-1

Buoy

This is a 12-by 6-foot drum-type buoy with a hawsepipe. The buoy is newly painted with 32 inches of freeboard and a 10 degree list. The wood rails are in good condition and there is medium marine growth below the waterline.

Riser

The riser chain was measured with calipers to be 2 3/4 inches in diameter from the buoy to a depth of 80 feet. At 80 feet the riser changes to older 2 1/4-inch chain. The diver only went to 100 feet. All measurements were greater than 90 percent of original wire diameter. The chain is oversized for an F-class mooring (1 1/4). No swivel was located.

Conclusion/Recommendation

The mooring is in satisfactory condition for continued fleet use. The reason for the list should be investigated at the time of the next repair. In the meantime, it should be periodically observed to check for increased list or decreased freeboard.

MOORING NO: C-1 CLASS: FR LOCATION: ~~NSY FLEET SOUND~~ CARR INLET AT: 46°-13'-24"N LONG: 122°-37'-00"W

WATER DEPTH: 212' ANCHOR SIZE/TYPE: NI BUOY TYPE: DRUM W/HAWSEPIPE

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 20' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION: NEW	SINGLE LINK % 90+	SINGLE LINK % 80+	SINGLE LINK % 80-	DOUBLE LINK % 90+	DOUBLE LINK % 80+	DOUBLE LINK % 80-	D	COMMENT
BUOY HARDWARE											12'x6' DRUM TYPE BUOY WITH 32" FREEBOARD
3"F SHACKLE W/LUGS				✓							BUOY BOTTOM IN GOOD CONDITION BUT
13" GROUND RING				✓							BUOY HAS 10° LIST. MEDIUM GROWTH
3"F SHACKLE				✓							BELOW WATER LINE. WOOD RUBBING RAILS
											AND FENDERS.
RISER	NEAR BUOY		2 3/4"	✓✓✓			✓✓✓			20'	RISER CHAIN NEW ABOVE 20'. NO
	MIDDLE		2 3/4"	✓✓✓			✓✓✓			80'	SWIVEL NOTED. BELOW 80', CHAIN
	NEAR GRD RG		2 1/4"	✓✓✓						100'	SIZE IS 2 1/4" AND CHAIN IS OLD
GROUND RING											AND COVERED WITH MEDIUM MARINE
GROUND LEG NO A	UPPER END										GROWTH.
	MIDDLE										DIVERS DID NOT DESEND BELOW
	ENTERS BOTTOM	↓									100 FEET.
GROUND LEG NO B	UPPER END	—									
	MIDDLE	—									
	ENTERS BOTTOM	—									
GROUND LEG NO C	UPPER END	—									
	MIDDLE	—									
	ENTERS BOTTOM	—									
GROUND LEG NO D	UPPER END										
	MIDDLE										DIVE TIME 22 MINUTES
	ENTERS BOTTOM										

DATE 25 AUGUST 1983 ENGINEER IN CHARGE: C.A. PENNINGTON DIVERS: DARRELL DURBIN

CHESNAVFACENGCOM REPORT FPO-1-83(38) C:\"PUGET SOUND NSY FLEET MOORING UNDERWATER INSPECTION REPORT"

Buoy

This is a 12 by 6-foot drum type buoy with a hawsepipe. The buoy is newly painted and has 27 inches of freeboard. This relatively short freeboard is probably due to the weight of 315 feet of chain in the water column. One side has a large dent in it but shows no loss of structural integrity. There is medium growth at the waterline and the bottom of the buoy is in good condition.

Riser

The riser is all 2 1/2-inch chain that measured between 80 and 90 percent of original wire diameter. The chain is oversized for an F-class mooring (1 1/4 inch). The divers only went to 100 feet. There is a swivel at 20 feet.

Conclusion/Recommendation

The mooring is satisfactory for fleet mooring use and in good condition.

MOORING NO: C-2 CLASS: FR LOCATION: CARR INLET NSY PUGET SOUND LAT: 47°-12'-45"N LONG: 122°-38'-30"W

WATER DEPTH: 315' ANCHOR SIZE/TYPE: NI BUOY TYPE: DRUM W/HAWSEPIPE

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 15' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION: NEW	SINGLE LINK % 90+	SINGLE LINK % 80+	SINGLE LINK % 80-	DOUBLE LINK % 90+	DOUBLE LINK % 80+	DOUBLE LINK % 80-	D	COMMENT
BUOY HARDWARE											12'x6' DRUM TYPE BUOY WITH A 27" FREEBOARD.
3" SHACKLE W/LUGS				✓							LARGE DENT IN HULL. WOOD FENDERS
											IN GOOD CONDITION. BUOY BOTTOM CK.
											3/4" WIRE ROPE HANGING OVER THE SIDE.
RISER	NEAR BUOY		2 1/2"	✓✓✓				✓✓✓		25'	SWIVEL AT 20'. OLDER CHAIN BELOW THE
	MIDDLE		↓	✓✓✓				✓✓✓		65'	SWIVEL. RISER CHAIN BADLY WORN
	NEAR GRD RG		↓	✓✓✓				✓✓✓		95'	BELOW 65' WITH DOUBLE LINK
GROUND RING		↓									MEASUREMENTS OF ONLY 52%.
GROUND LEG NO A	UPPER END										
	MIDDLE										DIVERS DID NOT DESCEND BELOW
	ENTERS BOTTOM	↓									100 FEET.
GROUND LEG NO B	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO C	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO D	UPPER END										
	MIDDLE										DIVE TIME 23 MINUTES
	ENTERS BOTTOM										

DATE 25 AUGUST 1983 ENGINEER IN CHARGE: C.A. PENNINGTON DIVERS: JIM RENNER

CHESNAVFACENGCOM REPORT PO-1-83(38), "PUGET SOUND NSY FLEET MOORING UNDERWATER INSPECTION REPORT"

Buoy

This is a 12 by 9 1/2-foot peg-top with a 2 1/2-inch-thick tension bar and 5 feet of freeboard. A large amount of 3/4-inch wire rope was tangled in the top jewelry and hanging over the side. A small hole was found on a top seam of the buoy. The buoy bottom is in good condition.

Riser

The riser consists of new 2 1/2-inch chain to a depth of 20 feet. From 20 feet to the point where the chain enters the bottom at 75 feet the chain is 2 inch and measured between 80 and 90 percent of original wire diameter. The chain is oversized for an F-class mooring (1 1/4).

Conclusion/Recommendation

At the next scheduled repair, the hole in the buoy should be repaired, and the wire rope removed. The mooring is satisfactory for continued fleet use and is in good condition.

MOORING NO: C-3 CLASS: FR LOCATION: CARR INLET NBY PUGET SOUND AT: 46° 14' 24" N LONG: 122° 41' 24" W

WATER DEPTH: 75' ANCHOR SIZE/TYPE: NI BUOY TYPE: PEG TOP W/TENSION BAR

BOTTOM TYPE: ☐ SAND ☒ MUD ☐ CLAY ☐ CORAL ☐ ROCK Visibility 20' D = depth NI = not inspected, inaccessible

COMPONENTS		NI	CONDITION NEW	SINGLE LINK % 90+	SINGLE LINK % 80+	SINGLE LINK % 80-	DOUBLE LINK % 90+	DOUBLE LINK % 80+	DOUBLE LINK % 80-	D	COMMENT
BUOY HARDWARE											12'x9'6" PEG TOP BUOY WITH 60" FREEBOARD AND
4" SHACKLE				✓							2½" THICK TENSION BAR. ¾" WIRE ROPE
13" GROUND RING				✓							HANGS OVER THE SIDE FROM THE TOPSIDE
2½" SHACKLE				✓							GROUND RING. BOTTOM WOOD FENDER
											IS MISSING. HEAVY MARINE GROWTH ON
RISER	NEAR BUOY		2½"	✓✓✓			✓✓✓			10'	BUOY BOTTOM IN ADDITION TO SOME
	MIDDLE		2"	✓✓✓				✓✓✓		45'	PITTING. HOLE IN TOP DECK WELD.
	NEAR GROUND		2"	✓✓✓				✓✓✓		75'	ABOVE 25', 2½" RISER CHAIN LOOKED
GROUND RING											NEW. BELOW 25', THE 2-INCH CHAIN
GROUND LEG NO A	UPPER END										WAS MEASURED TO BE ONLY 85%
	MIDDLE										OF ORIGINAL WIRE SIZE. NO SWIVEL
	ENTERS BOTTOM										NOTED IN RISER. ABOUT 15' OF
GROUND LEG NO B	UPPER END										CHAIN RESTS ON BOTTOM AFFORE
	MIDDLE										RISER ENTERS THE MUD.
	ENTERS BOTTOM										
GROUND LEG NO C	UPPER END										
	MIDDLE										
	ENTERS BOTTOM										
GROUND LEG NO D	UPPER END										
	MIDDLE										DIVE TIME 18 MINUTES
	ENTERS BOTTOM										

DATE: 25 AUGUST 1983 ENGINEER IN CHARGE: C.A. PENNINGTON DIVERS: BRIAN SMITH

ANNEX B

BUOY LOCATION SURVEY DATA

SURVEY OF PSNS BREMERTON

The survey of PSNS Bremerton was completed with the help of CBU 418 of NSB Bangor. The data was cross-checked and, in many instances, the angle was turned twice to provide an average reading.

SINCLAIR INLET

BENCHMARK DESCRIPTION

Seven benchmarks were located in the shipyard (Figure B-2) to establish the location of the seven moorings in Sinclair Inlet (Figure B-1).

1. R34-1 is located in the SE corner of the roof of Building 467 (Supply).

2. D58 is located in the SW corner of the roof of Building 290.

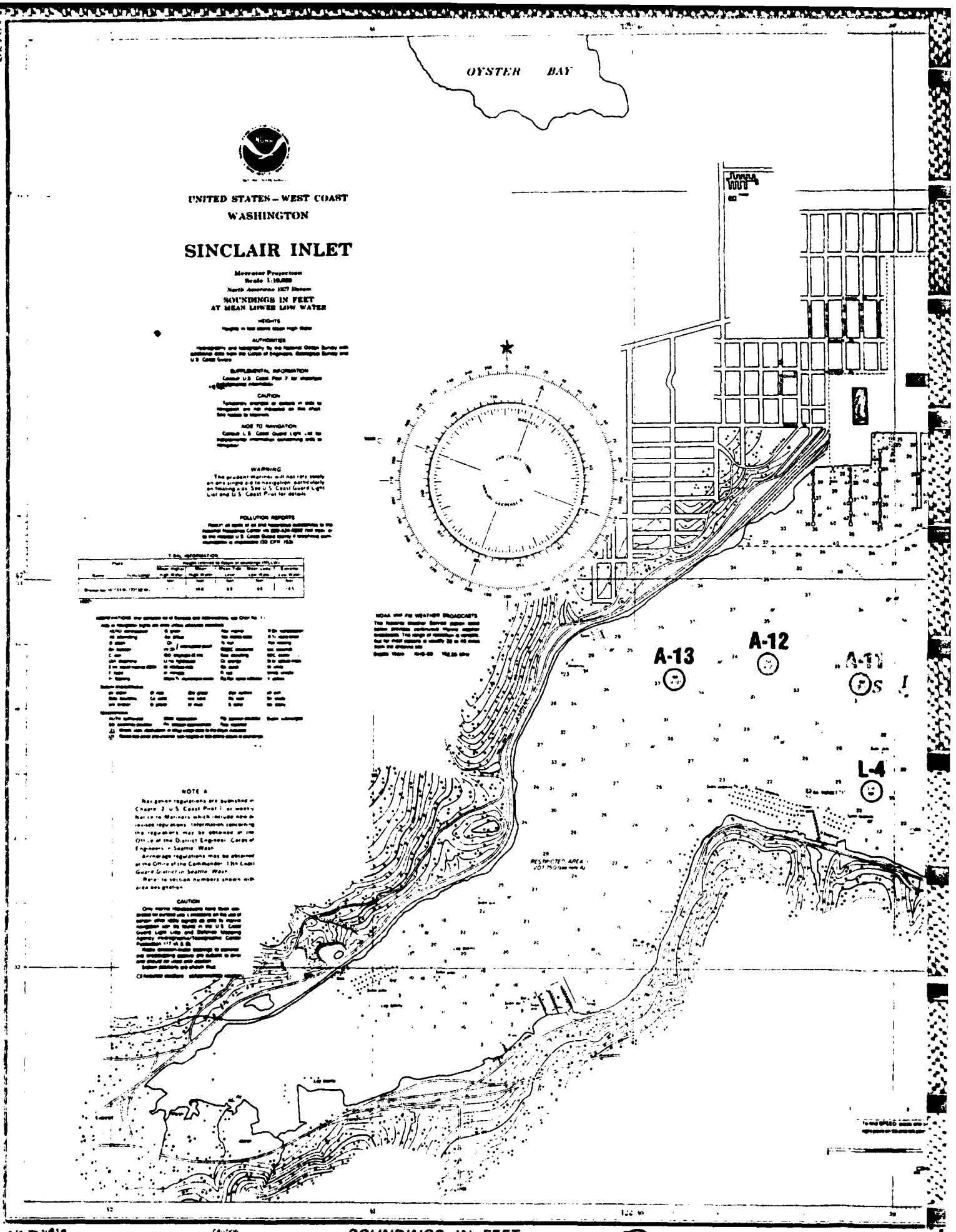
3. 3E-13 is located near the end of Pier 3 on the east side. It is a brass plate embedded in the concrete.

4. 3E-10 is further North on the same side of Pier 3.

5. 0+00 is near the end of the east embankment of Drydock 6. Sightings were made from a brass plate marked "100 ft. to ℄ dock" established by measuring 37 feet 6 1/2 inches at an angle of 174° 39' 40" clockwise from 0+00 while backsiting to 6+00.

6. 2+00 is a brass plate near the edge of the east embankment of Drydock 6.

7. 6+00 is a brass plate 600 feet north of the 0+00 mark and is also near the railing of Drydock 6.


OYSTER BAY
UNITED STATES – WEST COAST
WASHINGTON
SINCLAIR INLET
Mercator Projection
Scale 1:10,000
North American 1927 Datum
SOUNDINGS IN FEET
AT MEAN LOWER LOW WATER
HEIGHTS
AUTHORITIES
SUPPLEMENTAL INFORMATION
CAUTION
NOTE TO NAVIGATION
WARNING
The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.
POLLUTION REPORTS
NOAA VHF-FM WEATHER BROADCASTS
NOTE A
Navigation regulations are published in Chapter 2 U.S. Coast Pilot 7 or weekly Notice to Mariners which include new or revised regulations. Information concerning the regulations may be obtained at the Office of the District Engineer, Corps of Engineers, Seattle, Wash.
Anchorage regulations may be obtained at the Office of the Commander, 13th Coast Guard District in Seattle, Wash.
Refer to section numbers shown with area designation.
CAUTION
A-13
A-12
A-11
L-4
RESTRICTED AREA
SOUNDINGS IN FEET
18452
CAUTION
Published at Washington, D.C.
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

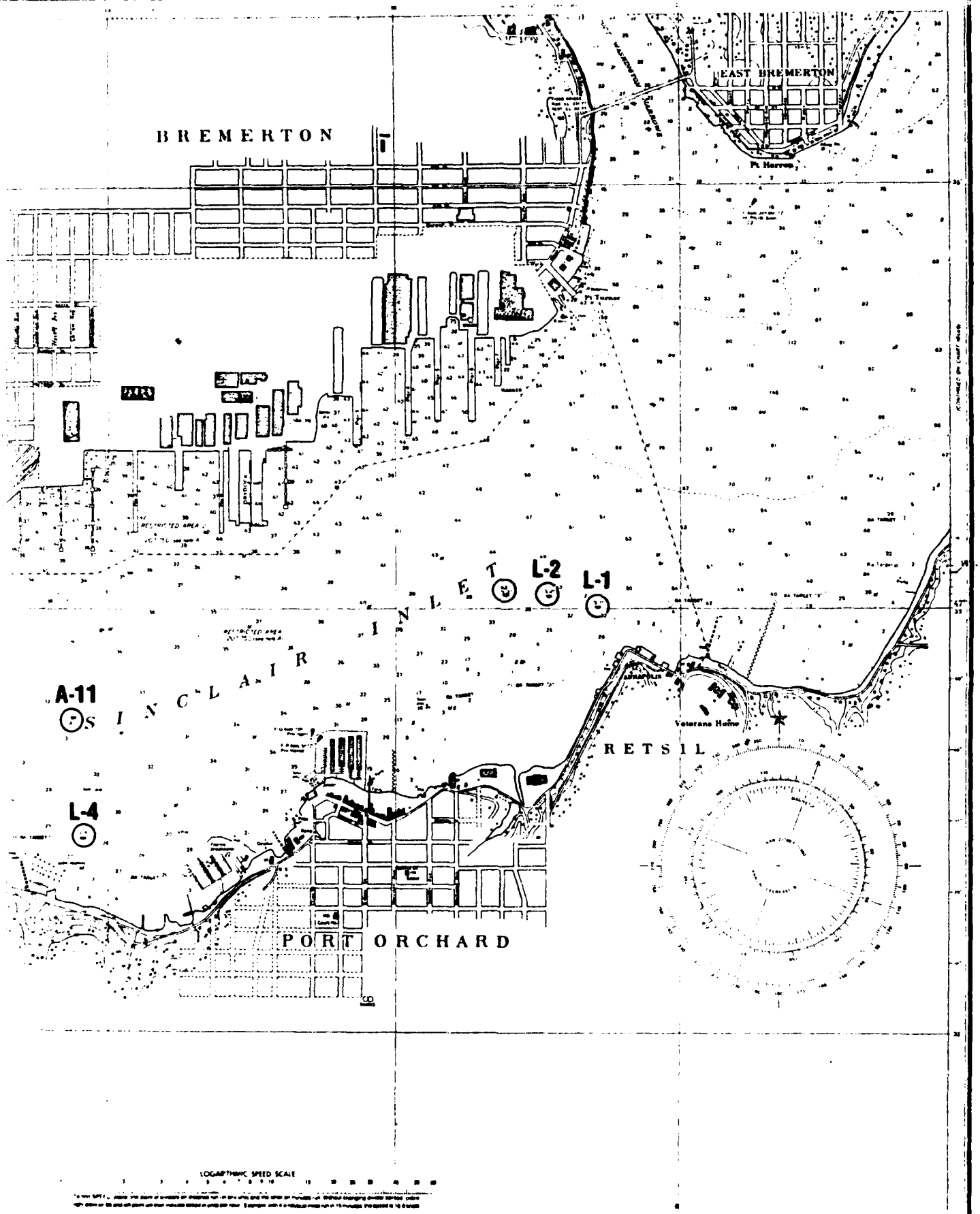


FIGURE B-1. SINCLAIR INLET FLEET MOORINGS

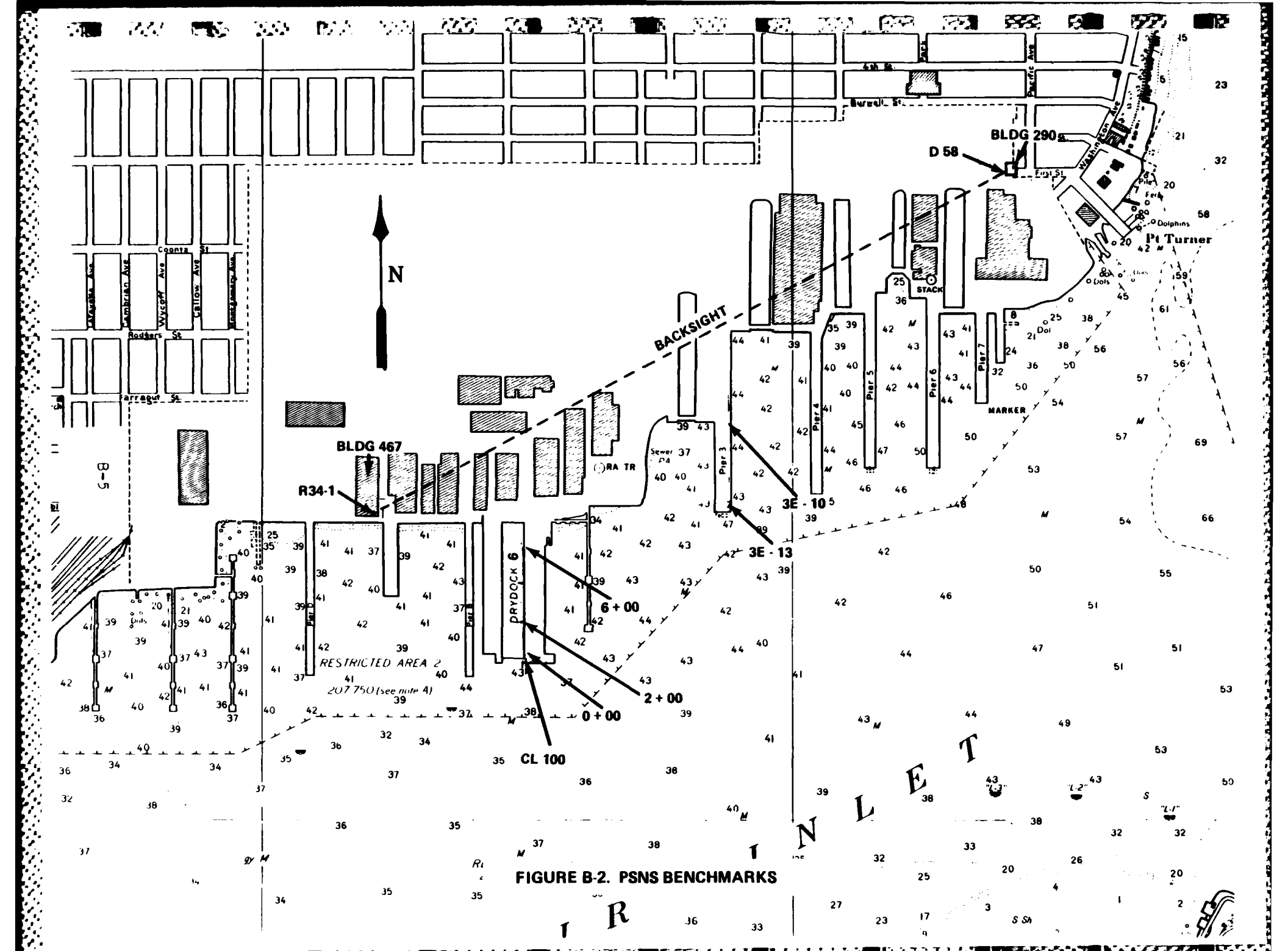


FIGURE B-2. PSNS BENCHMARKS

SURVEY POINT LOCATIONS
SINCLAIR
(FIGURE B-2)

R34-1	LAT	047° 33' 24" N
	LONG	122° 38' 47" W
D58	LAT	047° 33' 50" N
	LONG	122° 37' 36" W
0+00	LAT	047° 33' 12" N
	LONG	122° 38' 30" W
2+00	LAT	047° 33' 14" N
	LONG	122° 38' 30" W
6+00	LAT	047° 33' 18" N
	LONG	122° 38' 30" W
3E-13	LAT	047° 33' 24" N
	LONG	122° 38' 07" W
3E-10	LAT	047° 33' 27" N
	LONG	122° 38' 07" W

SINCLAIR INLET SURVEY DATA

ANGLES MEASURED FROM BENCHMARK R34-1

R34-1 on Bld. 467, backsite to D58 on Bld. 290. Turned clockwise.

Mooring	First Turn	Second Turn
L-4	132° 04' 20" Avg - 132° 04' 15"	264° 08' 20"
A-11	138° 04' 30" Avg - 138° 04' 35"	276° 09' 20"
A-13	168° 15' 00"	N/A

L-1, L-2, L-3, A-12 not visible

ANGLES MEASURED FROM BENCHMARK D58

D58, Bld. 290, backsite to R34-1, Bld. 467. Turned counterclockwise.

Mooring	First Turn	Second Turn
L-3	57° 29' 40" Avg - 57° 29' 50"	115° 00' 00"
L-2	66° 20' 00"	132° 40' 00"
L-1	74° 05' 40"	148° 11' 20"

ANGLES MEASURED FROM BENCHMARK 3E-13

3 3E-13 on Pier 3, back site to 3E-10. Turned clockwise

Mooring	First Turn	Second Turn
L-3	138° 39' 20" Avg - 138° 39' 25"	277° 19' 00"
L-2	131° 26' 50" Avg - 131° 26' 47"	262° 53' 30"
L-1	125° 46' 20" Avg - 125° 46' 15"	251° 32' 20"

ANGLES MEASURED FROM BENCHMARK CL

East side Drydock 6. Mark "100 ft to CL dock" is 37 feet 6 1/2 inches from 0+00 at 174° 39' 40" turned clockwise from backsite at 6+00.

Mooring	First Turn	Second Turn
L-1	103° 41' 20"	207° 22' 40"
L-2	104° 38' 20"	209° 16' 00"
	Avg - 104° 38' 10"	
L-3	104° 45' 20"	209° 29' 00"
	Avg - 104° 44' 55"	
L-4	209° 49' 00"	419° (360°+59°) 37' 40"
	Avg - 209° 48' 55"	

Note: From backsite turn counterclockwise for following:

A-11	138° 19' 40"	276° 38' 40"
	Avg - 138° 19' 20"	
A-12	123° 38' 40"	247° 16' 40"
	Avg - 123° 38' 30"	
A-13	115° 09' 40"	230° 19' 40"
	Avg - 115° 09' 45"	

ANGLES MEASURED FROM BENCHMARK 2+00

East side Drydock 6 at 2+00 backsite to 6+00.

Mooring	First Turn	Second Turn
A-12	126° 14' 40"	252° 30' 00"
	Avg - 126° 14' 50"	
A-11	140° 59' 20"	281° 58' 20"
	Avg - 140° 59' 15"	

CARR INLET

BENCHMARK DESCRIPTION

Four benchmarks (Figures B-4 and B-5) were used to locate the exact position of the moorings in Carr Inlet (Figure B-3). One benchmark, NEAR TWO, could not be found so another, "NEAR TO NEAR TWO", was established. The differences between these benchmarks should only be 2-3 feet.

1. NEAR TO NEAR TWO is located on the first point of land one-half mile east of the Acoustic Range Office on Fox Island. It is pre-existing wooden survey stake approximately 6 feet above the HHW Line, and should be approximately 3 feet NW of NEAR TWO.

2. CURB is located on the NE corner of the survey office and is a nail driven into the asphalt curb.

3. TOWER is a point located on the pavement directly under the center of the radio tower on the SW corner of the Range Office.

4. PAVEMENT is a point located by a nail driven into the driveway approximately 100 feet from the NW corner of the Range Office at a 45 degree angle.

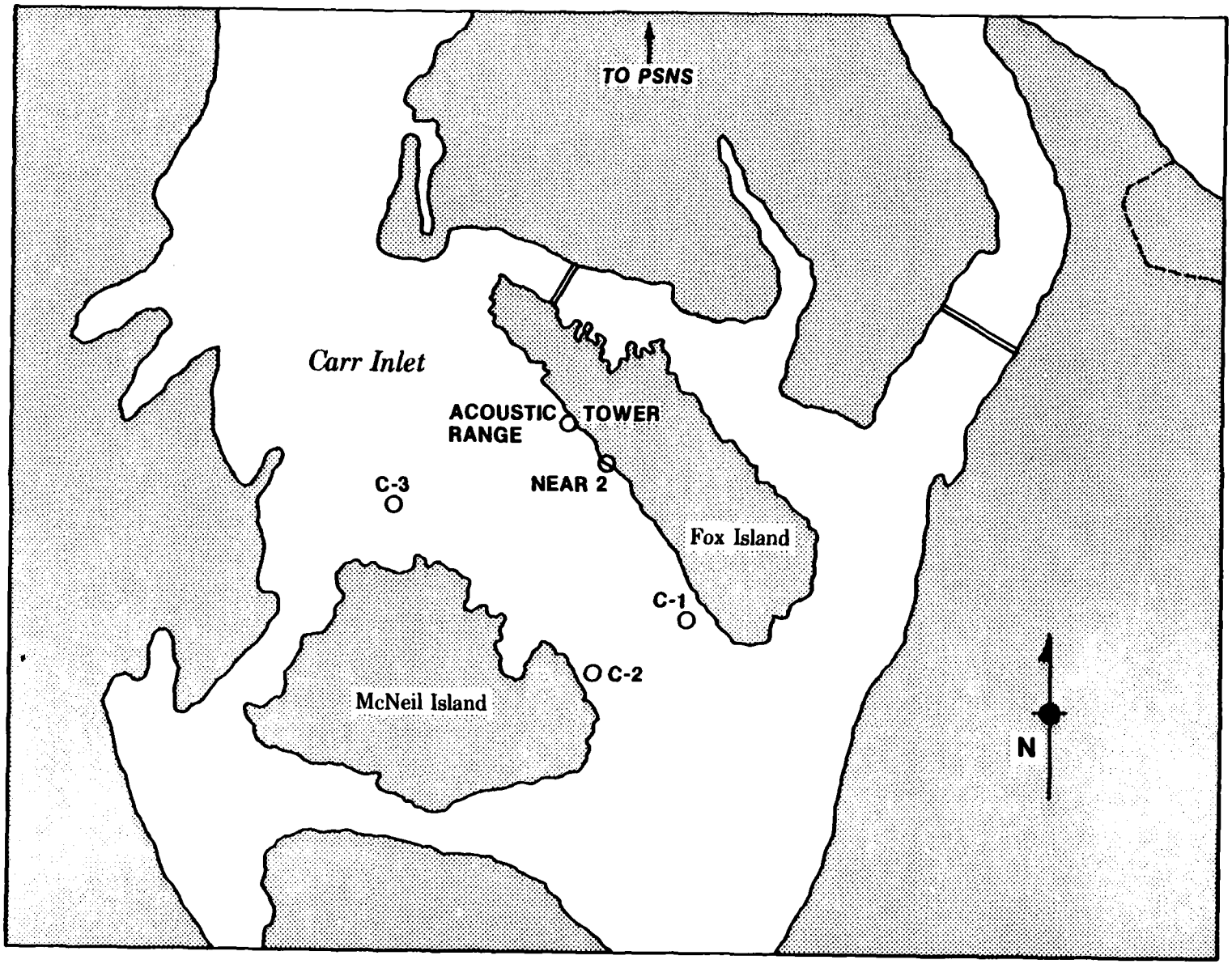


FIGURE B-3. CARR INLET MOORINGS

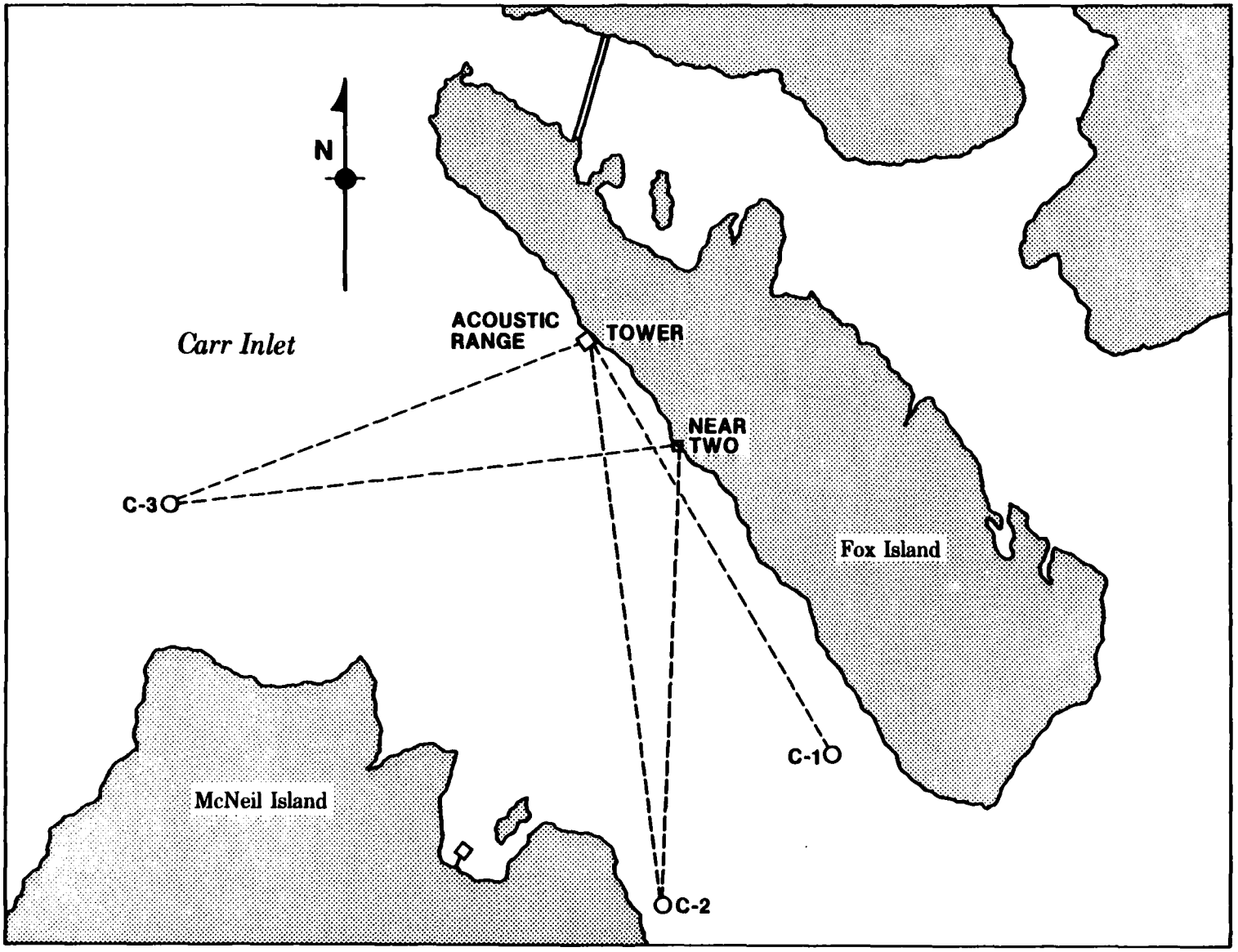


FIGURE B-4. CARR INLET BENCHMARKS

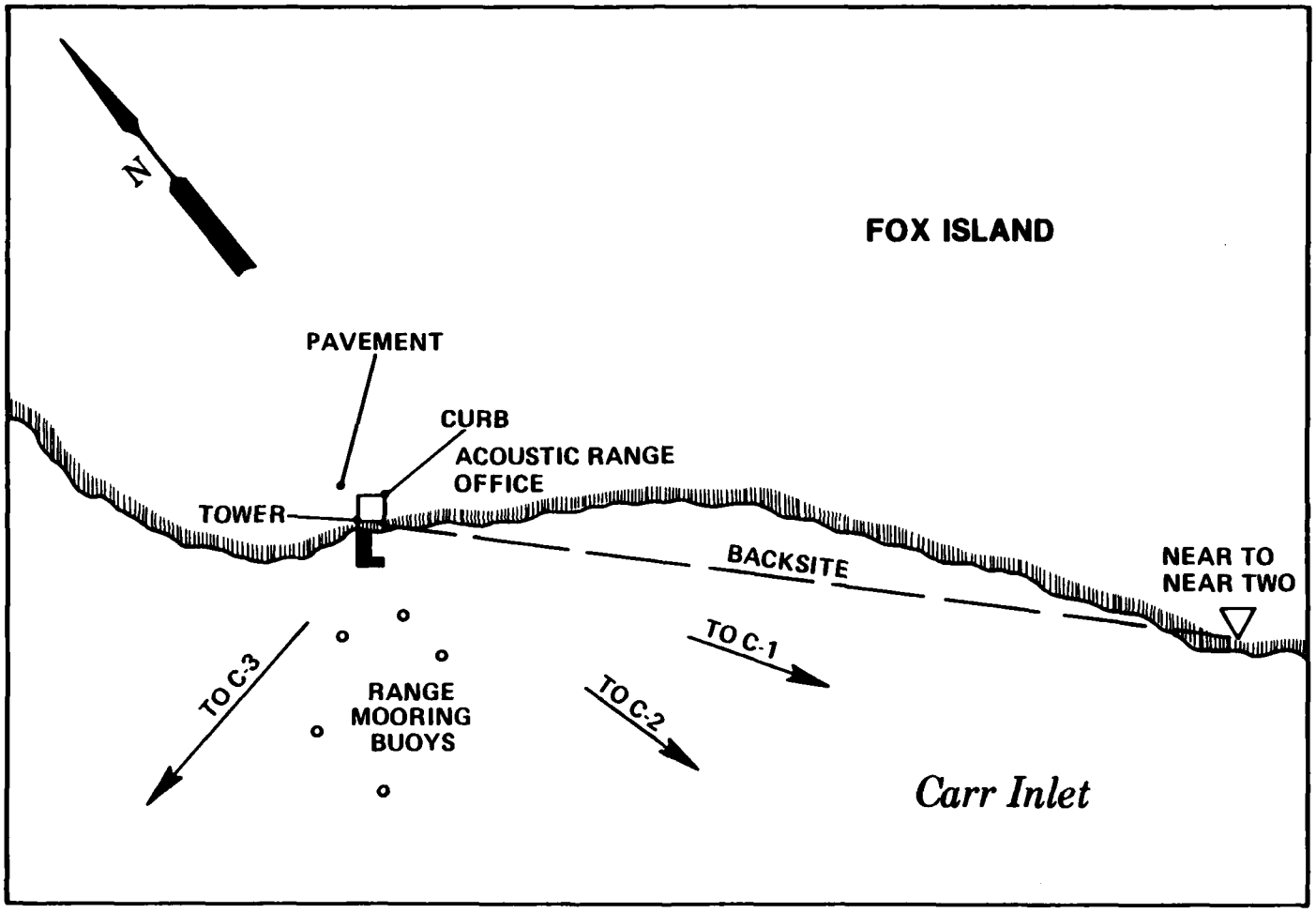


FIGURE B-5. CARR INLET BENCHMARKS

SURVEY POINT LOCATIONS
CARR
(FIGURE B-5)

PAVEMENT	LAT	047° 15' 24" N
	LONG	122° 38' 55" W
NEAR TO NEAR TWO	LAT	047° 14' 59" N
	LONG	122° 38' 28" W
CURB	LAT	047° 15' 24" N
	LONG	122° 38' 54" W
TOWER	LAT	047° 15' 24" N
	LONG	122° 38' 54" W

CARR INLET SURVEY DATA

ANGLES MEASURED FROM BENCHMARK NEAR TO NEAR TWO

NEAR TO NEAR TWO (Approx. 3 feet from NEAR TWO) backsite to CURB. Turned Counterclockwise.

Mooring	First Turn	Second Turn
C-1	N/A	
C-2	143° 35' 20" Avg - 143° 35' 25"	287° 11' 00"
C-3	071° 57' 30"	

NOTE: At the time of the survey it was considered neither time efficient nor cost effective to obtain a second angle for C-1

ANGLES MEASURED FROM BENCHMARK TOWER

Tower, Acoustic Range Office Radio Tower backsite to PAVEMENT. Mark NEAR TO NEAR TWO: 222° 39' 40" turned counterclockwise.

Mooring	First Turn	Second Turn
C-1	217° 52' 00" Avg - 217° 52' 10"	435° (360+075) 44' 30"
C-2	192° 26' 00" Avg - 192° 26' 15"	384° (360+024) 53' 00"
C-3	128° 33' 40" Avg - 128° 33' 55"	257° 08' 20"

Note: For plotting purposes the pavement backsite proved too short. To obtain angles from backsite of NEAR TO NEAR TWO turned clockwise (222° 39' 40") - angle from PAVEMENT Backsite was used.

C-1 222° 39' 40" - (217° 52' 00") = 004° 47' 40"

C-2 222° 39' 40" - (192° 26' 15") = 030° 13' 25"

C-3 222° 39' 40" - (128° 33' 55") = 094° 05' 45"

PUGET SOUND INSPECTION
BUOY LOCATIONS

SINCLAIR INLET

L-1	LAT	047° 33' 01" N
	LONG	122° 37' 20" W
L-2	LAT	047° 33' 02" N
	LONG	122° 37' 30" W
L-3	LAT	047° 33' 04" N
	LONG	122° 37' 40" W
L-4	LAT	047° 32' 27" N
	LONG	122° 39' 05" W
A-11	LAT	047° 32' 43" N
	LONG	122° 39' 08" W
A-12	LAT	047° 32' 47" N
	LONG	122° 39' 28" W
A-13	LAT	047° 32' 45" N
	LONG	122° 39' 56" W

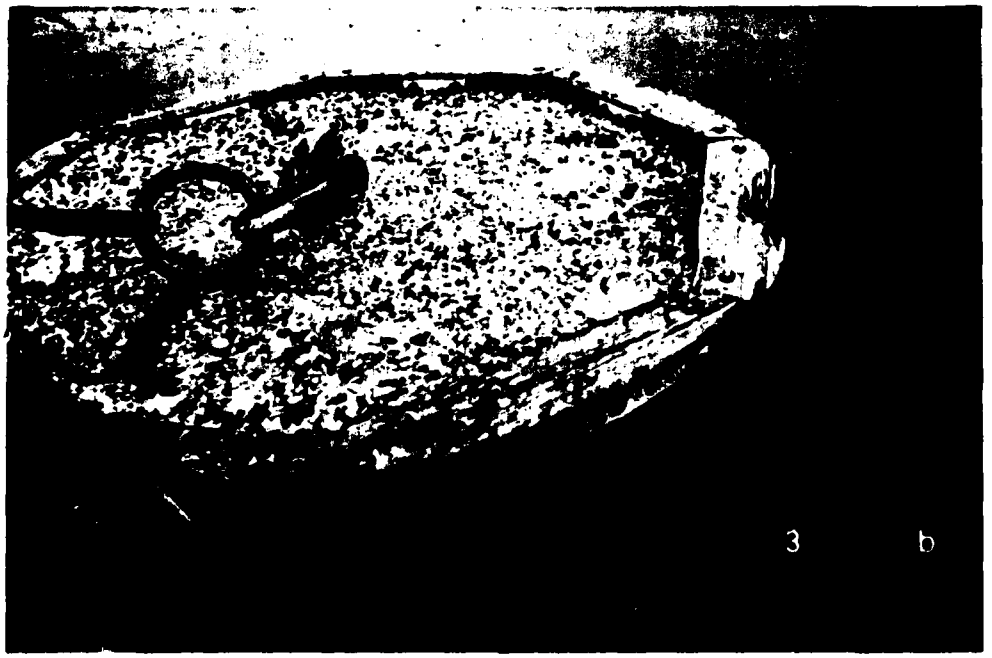
CARR INLET

C-2	LAT	046° 12' 48" N
	LONG	122° 38' 30" W
C-3	LAT	046° 14' 24" N
	LONG	122° 41' 26" W
C-1	LAT	046° 13' 24" N
	LONG	122° 37' 00" W

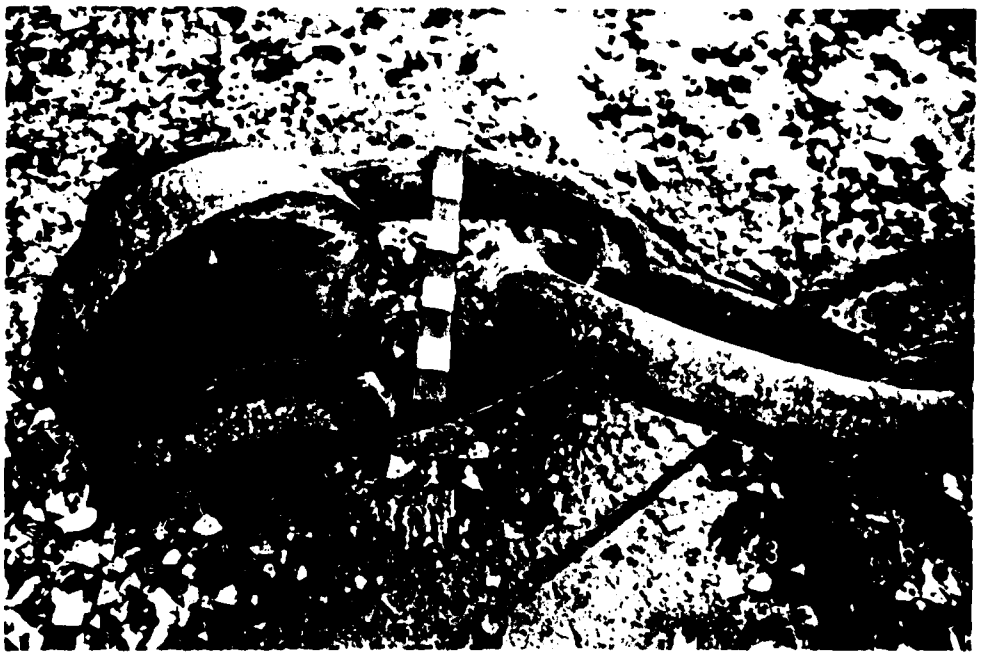
ANNEX C

PHOTOGRAPHS

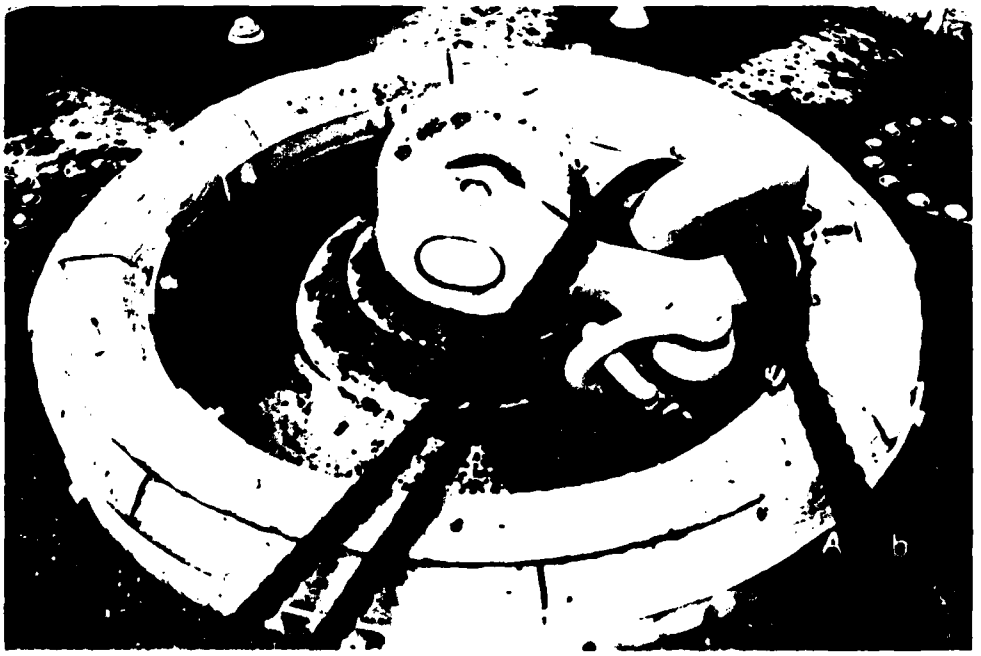
UCT Two Divers



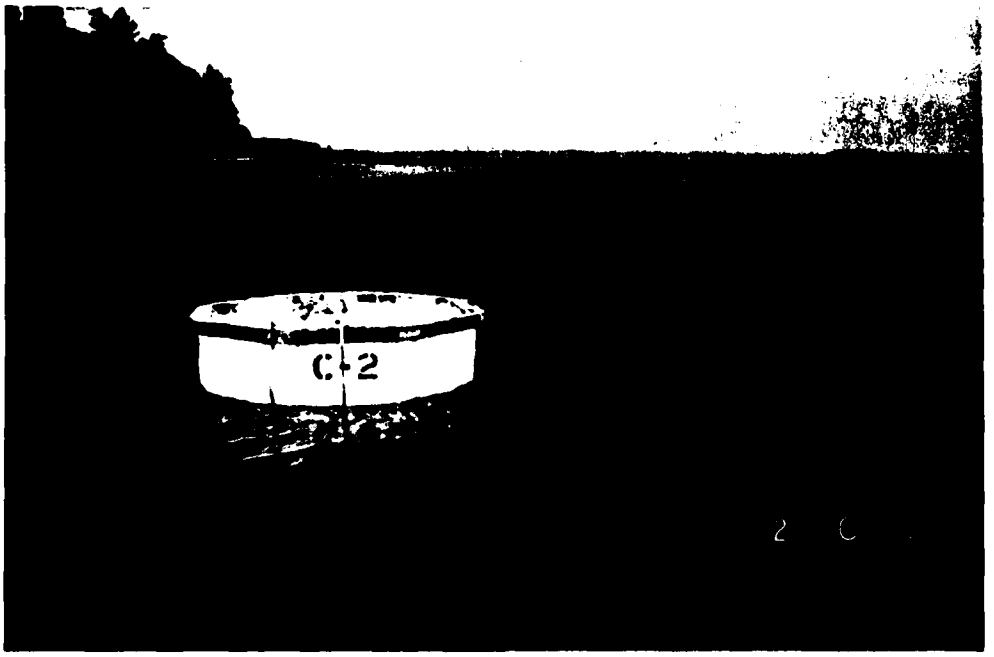
Mooring L-3 — Badly Deteriorated



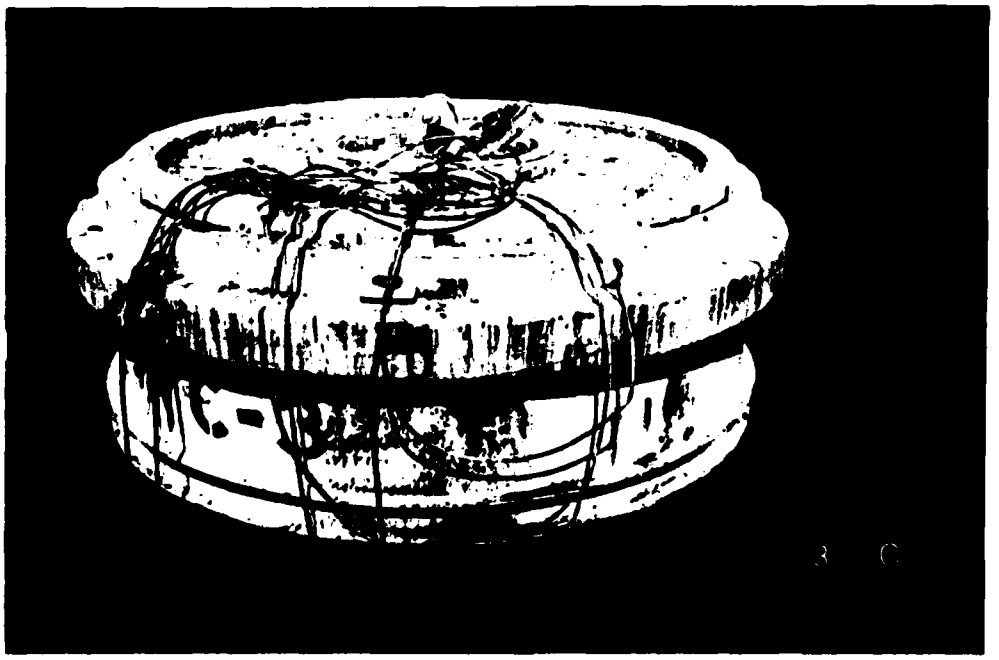
Mooring L-3 – Worn Top Jewelry



Mooring A-12 – Top Jewelry in Good Condition



Mooring C-2 – Low Freeboard but Good Condition



Tangled Wire Rope Atop Mooring C-3

Survey Point Carr Inlet. Tower Looking toward Benchmark Near Two

CB Survey Equipment and Operator

ANNEX D

REFERENCES

UNCLASSIFIED

01 02 RR UUUU 2571600

FROM CHESNAVFACENGCOM WASHINGTON DC

TO NAVSHIPYD PUGET SOUND WA

INFO COMNAVFACENGCOM ALEXANDRIA VA

WESTNAVFACENGCOM SAN BRUNO CA

UNCLAS //N11000//

1. A CHESNAVFACENGCOM/UCT TWO UNDERWATER INSPECTION OF THE 10 FLEET MOORINGS LOCATED AT PSNS WAS CONDUCTED DURING THE PERIOD OF 22-30 AUG 83. THE FOLLOWING IS A PRELIMINARY REPORT OF THE INSPECTION RESULTS AS RELATED IN PHONECON BETWEEN MR. L. MCCAUSLAND, PWC PSNS AND MR. C. PENNINGTON, CHESDIV, 13 SEP 83.

A. MOORINGS C-1, C-2, C-3, L-1, L-4: GOOD CONDITION.

B. MOORINGS A-11, A-12, A-13: GOOD CONDITION BUT REQUIRE RE-CLASSIFICATION TO D-, B-, C- CLASS MOORINGS RESPECTIVELY DUE TO USE OF UNDERSIZED CHAIN.

C. MOORINGS L-2, L-3: UNSATISFACTORY DUE TO EXCESSIVE CHAIN WEAR. RECOMMEND RESTRICTION OF USE AND OVERHAUL ASAP.

D. RECOMMEND A DESIGN REVIEW TO DETERMINE WHETHER A SINGLE ANCHOR LEG AND RISER WILL MEET THE REQUIREMENTS OF A FREE-SWINGING MOORING. A CHAIN SWIVEL SHOULD ALSO BE PROVIDED IN THE RISER TO PERMIT FREE ROTATION OF THE BUOY.

9 8 7 6 5 4 3 2 1 0

DISTR

DRAFTER TYPED NAME / TELEPHONE / OFFICE / SYMBOL / PHONE

C. PENNINGTON FPO-10P21

36608 14 SEP 83

RELEASER TYPED NAME / TITLE / OFFICE / SYMBOL / PHONE

H. S. STEVENSON, CDR, CEC, USN

COPY TO: FPO-10P21...FPO-10P2

00...09...0161...DAILY

UNCLASSIFIED

DD 173/1 (REV)

02 02 RR UUUU 2571600

E. RECOMMEND A REVIEW OF REQUIRMENTS TO DETERMINE ACTUAL NEED OF ALL MOORINGS.

2. CHESNAVFACENGCOM POINT OF CONTACT IS MR. C. PENNINGTON AT A/V 288-6608 OR 202-433-6608.

0 1 2 3 4 5 6

DISTR

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL, PHONE

TYPED NAME, TITLE, OFFICE SYMBOL, AUTOVON

SIGNATURE

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ROUTINE

R 2103312 AUG 82

FM CINCPACFLT PEARL HARBOR HI

TO CINCPAC PEARL HARBOR HI

INFO CHNAVMAT WASHINGTON DC
COMNAVAIRSYSCOM WASHINGTON DC
COMNAVFACENGCOM ALEXANDRIA VA
COMNAVTELCOM WASHINGTON DC
COMNAVSURFPAC SAN DIEGO CA
COMNAVAIRPAC SAN DIEGO CA
CG FMFPAC
COMOCEANSYSPAC PEARL HARBOR HI
COMNAVMARIANAS GUAM
COMPACMISTESTCEN PT MUGU CA
WESTNAVFACENGCOM SAN BRUNO CA
OICC MIDPAC PEARL HARBOR HI
OICC GUAM
OICC DIEGO GARCIA HOUSTON TX
PWC GUAM
PWC YOKOSUKA JA
PWC SAN FRANCISCO CA
CDR THREE ZERO NCR GUAM
NAVPAL CENTERVILLE BEACH CA
NAVSTA SEAL BEACH CA
NAVSHIPREPFAC SUBIC BAY RP
NAF ATSUGI JA
NAVSHIPYD PUGET SOUND WA
NSC SAN DIEGO CA
TRIREFFAC MANGON WA
NSY GUAM
NAVSUPPFAC DIEGO GARCIA
NAVSTA LONG BEACH CA
NSC PEARL HARBOR HI
NAVSHIPYD MARE ISLAND CA
PACMISRANFAC HALANEA BARKING SANDS HI
COMNAVSEASYSCOM WASHINGTON DC
COMNAVELEXSYSCOM WASHINGTON DC
CNR ARLINGTON VA
COMNAVLOGPAC PEARL HARBOR HI
COMSUBPAC PEARL HARBOR HI
COMTHIRDFLT
COMMARCORBASESPAC CAMP H M SMITH HI
COMNAVFORJAPAN YOKOSUKA JA
COMUSNAVPHIL SUBIC BAY RP
PACNAVFACENGCOM PEARL HARBOR HI
CHESNAVFACENGCOM WASHINGTON DC
OICC SUWESTPAC MANILA RP
OICC FAR EAST YOKOSUKA JA
PWC PEARL HARBOR HI
PWC SUBIC BAY RP
PWC SAN DIEGO CA
COM THREE ONE NCR PORT HUENEME CA
UCT TWO
NAVOCEANSYSCEN SAN DIEGO CA
NSD SUBIC BAY RP
MCAS IWAKUNI JA
NAVUSEAWARENGSTA KEYPORT WA
NAVMAG LUALUALEI HI
SUBASE BANGOR WA
NAVPHIBASE CORONADO SAN DIEGO CA
NAVSHIPREPFAC GUAM
NAVSTA SAN DIEGO CA
NAVSHIPYD PEARL HARBOR HI
SUBASE PEARL HARBOR HI

BT
UNCLAS //N11000//

SUBJ: UCT TWO FY83 EMPLOYMENT TASKING

DLVR:CHESNAVFACENGCOM WASHINGTON DC(9)...INFO

RTD:000-000/COPIES:0009

114776/235 1 OF 3 MI 0308 235/23:21Z 2103312 AUG 82
CSN:RADY00304 CINCPACFLT PEARL HARBOR HI

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A. CINCPACFLT PEARL HARBOR HI 260654Z JUN 82

1. REF A REQUESTED NOMINATIONS OF PROJECTS FOR UCT TWO ACCOMPLISHMENT FY83-85. FROM THE RESPONSES TO REF A THE FOLLOWING PROJECTS ARE TASKED FOR ACCOMPLISHMENT IN FY83:
   A. CENTERVILLE BEACH (CLASSIFIED)
   B. ARCTIC WEST (CLASSIFIED).
   C. BARKING SANDS, HI, CABLE LANDING AND REPAIRS
   D. WPNSTA SEAL BEACH, DEMOLISH ANAHEIM BAY BRIDGE
   E. NSD SUBIC, PILE REPAIR POL PIER
   F. NSD SUBIC, PILE REPAIR MARINE TERMINAL PIER PHASE I (REPAIR ALL SEVERE AND MAJOR DAMAGE)
   G. NAVSHIPREPFAC SUBIC, INSPECT ALAVA WHARF
   H. FLEET MOORING INSPECTION - PACIFIC DATA BASE (PEARL HARBOR HI, GUAM, YOKOSUKA, IWAKUNI, SASEBO, INDIAN ISLAND WA, BREMERTON WA)
   I. NAVMAG LUALUALEI, INSPECT AMMO PIERS W1-5
   J. UNDERWATER INSPECTION PROGRAM (NSC SAN DIEGO)
   K. SUBASE, BANGOR WA, UNDERWATER INSPECTION
   L. TRIREFFAC BANGOR WA, UNDERWATER MSF RANGE REPAIR
   M. DEGAUSSING RANGE SURVEY, SAN FRANCISCO CA
   N. NAVPHIBASE CORONADO SAN DIEGO CA, PIER INSPECTIONS

2. THE FOLLOWING PROJECTS ARE TASKED AS FILL IN WORK FOR FY83:
   A. UNDERWATER INSPECTION PROGRAM (NAVSTA PEARL HARBOR)
   B. NAVUSEAWAKENGSTA KEYPORT WA, INDIAN IS PHASE TWO MOORING
   C. NSD GUAM, REPAIRS TO SIERRA WHARF GUAM.
      REQUIRES COORDINATION WITH ON SITE NMCB FOR ACCOMPLISHMENT.

   THE FOLLOWING PROJECTS ARE TENTATIVELY TASKED FOR ACCOMPLISHMENT AS INDICATED:
   A. FY-84
      (1) ARCTIC WEST (CLASSIFIED)
      (2) NAVSHIPREPFAC GUAM, REPAIRS TO LIMA WHARF
      (3) FLEET MOORING INSPECTION - PACIFIC DATA BASE 9SUBIC BAY, NSF DIEGO GARCIA, PWC SAN DIEGO, NAVSTA SAN DIEGO, WPNGTA SEAL BEACH, NAVSTA LONG BEACH)
      (4) NSD SUBIC, WATERFRONT FACILITIES INSPECTION
      (5) NSD SUBIC, MONOBUOY FUEL LINE REPAIRS
      (6) DEGAUSSING RANGE SAN FRANCISCO, RANGE INSTALLATION
      (7) UNDERWATER INSPECTION PROGRAM CNAVSHIPY PEARL HARBOR, NSC PEARL HARBOR, SUBASE PEARL HARBOR)
      (8) SCARF REPAIR/INSPECTION
      (9) BARKING SANDS, UNDERWATER RANGE REPAIRS
      (10) NSD SUBIC, PILE REPAIR MARINE TERMINAL PIER PHASE 2

(REPAIRS TO MODERATE AND MINOR DAMAGE)

B. FY-85

(1) ARCTIC WEST (CLASSIFIED)
(2) BARKING SANDS UNDERWATER RANGE WORK
(3) FLEET MOORING INSPECTION - PACIFIC DATA BASE (PEARL HARBOR HI, GUAM, JAPAN, PUGET SOUND WA)
(4) UNDERWATER INSPECTION PROGRAM (MARE ISLAND WA)
(5) SUBASE PEARL, MCON P-088, REPAIR AND EXTEND SEAWALL THIS PROJECT WILL REQUIRE SEPARATE TASKING OF AN RNMCB, CBU, OR OTHER ORGANIZATION AS "PRIME CONTRACTOR" FOR PILE DRIVING AND TOPSIDE ZONE, WITH UCT ACCOMPLISHING IN WATER SUPPORT.

END

DTIC

6-86